S
353.609786
M2MHP
1980
1

Montana health systems plan

LEASE RETUR

MONTANA STATE LIBRARY
930 East Lyndale Avenue
Helena, Montana 59601

1980

Montana Health Systems Agency, Incorporated

Montana State Library
3 0864 1004 9863 6

362.978
M2mhp
1978

Montana Health Systems Agency, Inc.
324 Fuller Avenue
Helena, Montana 59601
(406) 443-5965

Ralph Gildroy
Executive Director

STATE DOCUMENTS COLLECTION
DEC 27 1979
MONTANA STATE LIBRARY
930 E Lyndale Ave.
Helena, Montana 59601

December 20, 1979

Dear Reader:

The Montana Health Systems Agency is very pleased to provide this copy of its 1980 Health Systems Plan (HSP) for Montana. This second revision of the Plan was approved by the MHSA Governing Board on November 2, 1979. The Executive Summary presents an overview of the Plan's contents.

Those who served on Subarea Advisory Councils, MHSA Committees, and Task Forces contributed thousands of hours to the development of this Health Systems Plan. We are grateful for their contributions in time, effort and expertise.

The distribution of this document is to all those who participated in its production and is available through the State Library system. Other persons desiring a copy please contact the Montana Health Systems Agency.

Sincerely,

Ralph Gildroy

RALPH GILDROY
Executive Director

TABLE OF CONTENTS

THIRD ANNUAL HEALTH SYSTEMS PLAN

		Page
	Letter of Introduction — Ralph Gildroy, Executive Director	i
	Table of Contents	ii
	Executive Summary	iii
Chapter	1 - Introduction	1
	1.0 Purpose and Use of the Health Systems Plan (HSP)	1
	1.1 Scope and Limitations	1
	1.2 Methodology	1
Chapter	2 - Overall Principles	3
	2.0 The Agency's Mission	3
	2.1 General Principles	3
Chapter	3 - Tertiary (Regional) Services	5
	3.1 Clinical Cardiovascular Laboratories and Cardiac Surgery Facilities	7
	3.2 Radiation Therapy	13
	3.3 Computerized Axial Tomography (CAT) Scanners	21
	3.4 End Stage Renal Disease	29
	3.5 Neonatal Intensive Care Units	37
Chapter	4 - Secondary Health Services	45
	4.1 General Hospital Acute Inpatient Care	47
	4.2 Acute Care Psychiatric Beds	69
	4.3 Clinical Laboratories	75
	4.4 Diagnostic Imaging	81
	4.5 Long-Term Care Facilities	89
	4.6 Home Health Care	105
	4.7 Alcohol and Drug Abuse Services	113
	4.8 Mental Health Services	125
	4.9 Comprehensive Rehabilitation Programs	133
Chapter	5 - Primary Health Services	141
	5.1 Primary Health Care Personnel	143
	5.2 Dental Personnel	155
	5.3 Emergency Medical Services	167
Chapter	6 - Pre-care and Preventive Health Services	181
	6.1 Preventive Dental Services	183
Chapter	7 - Health Status Characteristics	195
	7.1 Heart Disease	197
	7.2 Cancer	203
	7.3 Alcoholism	207
Appendix	1 - Background Information	213
	1.0 Authority	
	2.0 Mission and Purpose of the Health Systems Agency	
	3.0 Montana Health Systems Agency's Responsibility	
Appendix	2 - The Health Care Delivery System Model	215
	1.0 Health Systems Overview	
	2.0 The Community Health Care System Model	
	3.0 The Four Different Levels of Health Care Service	
	4.0 Criteria Considered for the Provision of Service	
Appendix	3 - Statistical Description of the Montana Service Area	219
	1.0 Introduction	
	2.0 Population Characteristics	
	3.0 Socio-Economic Indicators	
	4.0 Geographical, Climatic and Transportation Description	
	5.0 Economic Characteristics	
	6.0 Health Status Indicators	
	6.1 Births	
	6.2 Deaths	
Appendix	4 - Glossary of Terms	235
Appendix	5 - The Health Planning and Development Process	243
Appendix	6 - MHSA Committees	247

EXECUTIVE SUMMARY

In accordance with Public Law 93-641 and the Health Planning and Resources Development Amendments of 1979 (Public Law 96-79), the staff developed the 1980 Montana Health Systems Plan to delineate Montana health care in 1985. Incorporated are plan component revisions approved by the MHSA Governing Board on November 2, 1979. This Health Systems Plan should serve as a basis for decision making in the area of planning and resource development. It encompasses guidelines, review criteria and MHSA policy statements. The MHSA's primary mechanism for encouraging the types of health services to be delivered in Montana is the review process. All health care institutions contemplating major capital expenditures, the development of new services or the alteration of the number of licensed beds must submit such projects to review by the MHSA and the State Department of Health and Environmental Sciences (DHES). In these reviews the MHSA recommends to DHES, which has final decision making authority. In reviews of selected health programs for the Proposed Use of Federal Funds (PUFF), the MHSA has approval/disapproval authority. Consequently, the seven chapters of the Health Systems Plan emphasize the provision of reasonable criteria for making these recommendations and decisions.

One of the major themes of the entire Health Systems Plan is cost containment. Table 1 presents rough estimates of the total expenditures in 1977 for the services and programs covered in the Plan. Many of the plan components are intended to provide a baseline for reviewing new applications.

Service	Number Procedures	Overall Charge Per Procedure	Total Charges 1978
Cardiac Caths	1,300	$ 1,000	$ 1,300,000
Open Heart Surgery	278	12,000	3,336,000
Radiation Therapy	20,310	50	1,015,500
CAT Scans	3,342	300	1,002,600
E S R D	5,733	165	945,945
N I C Us	539	20,000	10,780,000
		Subtotal	$18,380,045[1]
TERTIARY CARE			$ 18,380,045
HOSPITAL CARE			111,900,000
General Acute Inpatient Care			-
Critical Care (ICU/CCU) Units			-
Acute Psychiatric Units			-
Diagnostic Imaging			-
Clinical Laboratories			-
LONG-TERM CARE FACILITIES			37,100,000
HOME HEALTH AGENCIES			1,400,000
ALCOHOL AND DRUG SERVICES			1,100,000
MENTAL HEALTH SERVICES			17,000,000
PRIMARY HEALTH CARE PERSONNEL			2,300,000
DENTAL PERSONNEL			300,000
EMERGENCY MEDICAL SYSTEM			900,000
PREVENTIVE DENTAL SERVICES			100,000
		TOTAL	$190,480,045

[1] Estimated 1978 total costs.

TABLE 1 - Estimated 1977 Total Costs in Montana for the Services Addressed in the Health Systems Plan.

The 1980 Health Systems Plan includes guidelines, criteria and policy statements for 18 health services and three major health problems. The conditions set forth by the regional office to be incorporated in this year's Plan have been met, including the development of quantified goals and objectives, the National Guidelines resource standards, and the development of substantive long range recommended actions.

The first health services discussed are tertiary services, which are specialized, highly complex and expensive services with a relatively low level of utilization, such as Radiation Therapy and End Stage Renal Disease. The MHSA supports the development of three regional tertiary centers in Montana — Billings, Great Falls and Missoula. Many of these services have already been established in these cities and are sufficient to meet the needs of Montanans through 1985. For most of these services, exceptions to the national guidelines are needed to insure reasonable accessibility for all Montanans. Table 2 provides comparisons of national guidelines and current utilization levels, along with expected 1985 utilization, for hospital occupancy and bed supply and a number of tertiary services.

Next, the Plan addresses nine secondary services such as general hospital inpatient care, alcohol and drug abuse services, mental health services and clinical laboratory services. The first two components in this section deal directly with hospital services and the issue of national guidelines for hospital resource standards and occupancy rates. This year, the plan development committee chose to eliminate the ICU/CCU component and include relevant data in the General Hospital Acute Inpatient Care component.

MHSA studies indicate Montana will have 3.9 hospital beds per 1,000 population in 1985 if no additional beds are built, which would be within the national guideline ratio of 4.0. However, Montana hospitals should not be expected to meet the guideline for occupancy rates of 80 percent, since Montana hospitals are much smaller than those in most other states and therefore must regularly keep a higher proportion of beds available to provide adequate community service, especially in emergency situations. The components on clinical laboratory and diagnostic imaging services, which are provided in hospitals, clinics and individual physician's offices, stress the need to end duplication of effort. In the current plan, the MHSA supports alternatives to skilled nursing facilities and suggests lifting the one-year moratorium on nursing home construction. The MHSA also supports the expansion of home health care in Montana, with the caveat that all new home health care agencies demonstrate financial viability and the availability of trained personnel in the service area.

In the area of primary care, the plan addresses the subjects of primary care personnel, dental personnel and emergency medical services (EMS). The first two components are manpower studies estimating the number of professionals practicing in Montana, and the EMS component develops guidelines from the goals and objectives of EMS annual funding applications.

The plan's last two chapters are concerned with preventive health services and three general health problems affecting Montanans - heart disease, cancer and alcoholism. The preventive health care component focuses on preventive dental care. The MHSA supports the concept of fluoridation

SERVICE	NATIONAL GUIDELINES	CURRENT STATUS (1978)	EXPECTED STATUS (1985)
General Hospitals - Bed Supply	4.0 Beds/1,000 population (would result in 3,439 beds in 1985)	4.3 beds/1,000 population (3368 beds)	3.2 beds/1,000 population (2,955 beds) if Plan were completely implemented. 3.9 beds/1,000 population (3,368 beds) if no beds were added or deleted 4.0 beds/1,000 population (3,480 beds) if the beds called for in the Plan were added, but none taken out of service
General Hospitals - Occupancy Rate	80% Annual Average Occupancy	54.3%	67.8% if Plan were completely implemented 59.5% if no beds were added or subtracted 57.6% if beds were added and none taken out of service

Obstetrical Services	Hospitals providing care for obstetrical problems should have at least 1,500 births annually and have an annual average occupancy rate of 75%		Births	% Occ.		Births	% Occ.
		Kalispell Regional	707	78.9	Kalispell	942	148.8
		Missoula Community	1300	60.2	Missoula Community	1,748	78.9
		Montana Deaconess	1217	57.6	Montana Deaconess	1,370	61.8
		St. James Community	510	50.6	St. James Community	627	54.0
		Bozeman Deaconess	667	38.4	Bozeman Deaconess	768	52.0
		St. Vincent	2111	80.2	St. Vincent	2,384	90.4
Neonatal Special Care Units	Total number of beds should not exceed 4 per 1,000 live births per year A single neonatal unit should contain a minimum of 15 beds	30 beds equals 2.5 beds/1,000 live births			39.2 beds equals 2.6 beds/1,000 live births		
		Billings	10		Billings	10.6	Regional Neonatal Centers (Level II)
		Great Falls	10		Great Falls	11.1	
		Missoula	4		Missoula	7.5	
		Butte	4		Butte	5.9	
		Kalispell	2		Kalispell	4.1	
Pediatric Inpatient Services - Number of Beds	Each unit should have at least 20 beds	Kalispell	8	56.8	Kalispell	8	70.6%
		St. Patrick	30	45.2	St. Patrick	30	53.9%
		Missoula Community	10	66.0	Missoula Community	10	77.6% (est.)
- Occupancy Rates	Each unit with between 20 and 39 pediatric beds should have an annual occupancy rate of 65%	Montana Deaconess	20	50.4	Montana Deaconess	20	56.2%
		Columbus	29	39.8	Columbus	29	44.4%
		Northern Montana	12	60.1	Northern Montana	12	63.0%
		Shodair	35	35.6	Shodair	35	44.0%
		Silver Bow General	14	21.0	Silver Bow General	14	22.6%

		St. James Community	23	42.7	St. James Community	23	45.6%
		Bozeman Deaconess	7	47.6	Bozeman Deaconess	7	56.1%
		St. Vincent	28	79.2	St. Vincent	28	100.3%
		Billings Deaconess	10	35.2	Billings Deaconess	10	44.6%
		Holy Rosary	11	16.1	Holy Rosary	11	18.2%
Open Heart Surgery	Minimum of 200 open heart procedures annually in each facility after 3 years of operation	Billings Deaconess	166		Billings Deaconess	130	
		St. Patrick	112		St. Patrick	130	
		Montana Deaconess	-----		Montana Deaconess	83	
Cardiac Catheterization	Minimum of 300 cardiac catheterizations annually in each facility after 3 years of operation	Billings Deaconess	486		Billings Deaconess	361	
		St. Vincent	111[4]		St. Vincent		
		St. Patrick	360		St. Patrick	347	
		Montana Deaconess	343[5]		Montana Deaconess	221	
Radiation Therapy	Each facility should serve a population of 150,000 persons and treat at least 300 new patients annually after 3 years of operation		No. Proc.		(Est. Pop.)	No. New Patients	No. Proc.
		St. Patrick	2607		St. Patrick (261,259)	784	11,757
		Columbus	7069		Columbus (183,309)	551	8,271
		St. James Community	1218		St. James (78,049)	234	1,756
		Bozeman Deaconess	435		Boz. Deaconess (64,204)	176	1,317
		St. Peter's	1211		St. Peter's (58,528)	176	1,317
	after 3 years of operation	St. James Community	1218		St. James (78,049)	234	1,756
		Bozeman Deaconess	435		Boz. Deac. (64,204)	193	1,445
		St. Peter's	1211		St. Peter's (58,528)	176	1,317
		Billings Deaconess	5[6]				
		Northern Rockies Reg. Cancer Center	7765		Northern Rockies Reg. Cancer Center (280,834)	843	12,637
CAT Scanners	Each facility should operate at a minimum of 2,500 procedures per year after 1 year of operation	Annualized	Esti-mates				
		St. Patrick	1676				
		Columbus	617				
		Eastern Rad. Associates	1049				
End Stage Renal Disease	Each facility should be consistent with DHEW regulations governing the coverage of ESRD providers	(No. Stat)	No. Dialyses	% Used	(No. Stat)	No Dialysis	
		St. Patrick (2)	185	17.3	St. Patrick 8.4	4,184	
		Columbus (7)	1263	80.8	Columbus (6.6)	3,302	
		St. Peter's (3)	1493	83.5	St. Peter's (8.0)	4,005	
		Billings Deac. (7)	2914	90.7	Billings Deac. (12.3)	3,766	

TABLE 2

1) Based on average length of stay of 3.46 days and the assumption that the size of the units will remain the same.
2) Based on the assumption that utilization will increase in proportion to the population and the size of the units will remain the same.
3) Estimated number of procedures performed in each subarea in 1985? South Central and Eastern Subareas combined for Billings Deaconess and St. Vincent's; Southwestern Subarea not included.
4) St. Vincent Hospital has been doing cardiac catheterizations since July 9, 1978.
5) Fiscal year data — July-June.
6) Service discontinued, May, 1978.

while recognizing that water fluoridation decisions must be made by the local communities affected. The components on heart disease, cancer and alcoholism suggest possible programs for prevention and health education.

For additional background on the Montana Health Systems Agency, its purpose and functions, the current annual report, — **Rhapsody in Health,** — is available on request.

CHAPTER 1
INTRODUCTION

1.0 Purpose and Use of the Health Systems Plan (HSP)

The purpose of this plan is to promote the development of the most effective supply, distribution and organization of health facilities and services within Montana. Specifically, it will be used:

(1) **To guide the Montana Health Systems Agency (HSA) in:**
- Identifying high priority health care areas in need of special, in-depth studies
- conducting project review activities for grant applications; capital expenditure proposals (Section 1122 of the Social Security Amendments); and local, state and federal plans or policies affecting the health care delivery system in Montana
- formulating positions on health or health related issues of concern to the residents of Montana; and
- allocating Area Health Services Development Fund monies, should they become available.

(2) **To inform the appropriate health care providers** about the health care needs evident in Montana and the priorities of the MHSA in order to:
- enable health care providers to better make informed and rational decisions in allocating their resources; and
- encourage the implementation of program development activities addressing identified problems.

(3) **To inform government officials** about the health care needs evident in Montana and the priorities of the MHSA in order to:
- assist governmental entities in making informed and rational decisions in allocating health care resources in Montana.

(4) **To inform community residents** about the health care needs evident in Montana and the priorities of the MHSA in order to:
- promote public involvement in health care planning; and
- increase public awareness of the health care delivery system.

1.1 Scope and Limitations

Theoretically, the Montana Health Systems Plan should address all aspects of health and the health care delivery system in Montana. Unfortunately, because of staff and time constraints, this cannot be done. Therefore, this plan attempts to highlight the major concerns of Montanans and to suggest possible strategies which may relieve some of the more important problems.

In this year's revision of the Montana Health Systems Plan, guidelines for comprehensive rehabilitation programs have been added. At the same time, five services addressed in last year's plan were either deleted or combined with existing components.

The primary purpose of the service components in this plan is to aid in the review of proposed new services and to serve as a starting point in conducting appropriateness reviews. Throughout these components, a concerted effort was made to strike a balance among costs, accessibility and quality. These components are oriented toward minimizing duplication and restricting excess capability of institutional services.

In some cases, data does not exist which would support further analyses. In other cases, staff and time limitations prevented going into further detail. Consequently, it is suggested that the components be used as general guidelines which are tempered by local needs and demands.

1.2 Methodology

This year, effort has been devoted to giving the public, interested providers and the Montana Health Systems Agency subarea councils an opportunity to reconsider the agency's policies toward the services addressed in the Plan. These policies are stated in each component's Goals, Objectives and Recommended Review Criteria.

A series of three public hearings were held in each of the subareas during the summer and fall. One hearing was devoted to the components in Chapter 3; the second, to those in Chapter 4; and the third, to those in Chapters 5, 6 and 7. At each of these hearings, the Montana Health Systems Agency planning staff presented its suggested changes and then received comments, suggestions and criticisms from the public and the council. All comments were reviewed by the Montana Health Systems Agency Plan Development Committee. After those changes to be included were incorporated, the Plan Development Committee submitted the entire Plan to the Montana Health Systems Agency Governing Board for its adoption on November 2, 1979.

One new component addressed in this year's Plan (Comprehensive Rehabilitation Programs), was approved by the Governing Board. It was developed in a manner similar to that used in the two previous plans.

Schematic diagrams of the process used in the revision of the Plan components and in the development of the new component are presented in Appendix 5.

CHAPTER 2
OVERALL PRINCIPLES

2.0 The Agency's Mission

A principle purpose of the Montana HSA is to engage in health planning consistent with the mandates of Public Law 93-641 and Public Law 96-79. As specified in the Agency's By-Laws, its mission is to:

1. Improve the health of the residents of the State of Montana,
2. Increase the accessibility, continuity and quality of health services of the state,
3. Restrain increases in the costs of providing health services, and
4. Prevent unnecessary duplication of health services, manpower, and facilities within the state.

2.1 General Principles

1. Health services should be cost effective.
2. Consumers must share the responsibility for their own health and the costs of health services.
3. Health education programs should be emphasized.
4. More emphasis should be given to the social components of health care, including, but not necessarily limited to, the special circumstances of the patient, his family, and the resources and the constraints of the community.
5. Health services should be coordinated at the local level to the maximum extent possible.
6. Primary care physicians should be recruited to shortage areas.
7. Alternatives to inpatient care should be encouraged.
8. Unnecessary duplication within the health field should be minimized.
9. The Plan should be developed with the intent of developing services for Montana where possible, practical and economically feasible.
10. The Plan should be developed so all providers are given reasonable and equitable compensation for the services they are expected to deliver.

CHAPTER 3
TERTIARY (REGIONAL) SERVICES

Tertiary care services are those special services which, because of complexity, cost, and/or relatively low levels of utilization, are planned to be located within a large catchment area. For these reasons, tertiary care services are typically provided in large referral hospitals and planned on a regional basis. In this plan, five tertiary care services are addressed. They are:

- Clinical Cardiovascular Laboratories and Cardiac Surgery Facilities
- Radiation Therapy and Other Oncology Services
- Computerized Axial Tomography (CAT) Scanners
- End Stage Renal Disease (ESRD)
- Neonatal Intensive Care Units

Table 1 shows the general categories in which these services can be classified, the settings in which they are typically found and whether or not they are addressed in the National Guidelines.

Most of the services addressed in this chapter can be classified as diagnostic and treatment services. In some components, prevention and detection strategies are discussed. Although there are prevention and detection aspects in almost all of these components, they are particularly important in delivering neonatal care.

The most common setting in which tertiary care services are found in Montana is in the large community (short-stay) hospital. Radiation therapy and CAT scanners, both radiological procedures, are also found in ambulatory settings (physicians' offices). The End Stage Renal Disease component emphasizes the potential of home health care, especially in a rural state such as Montana, but at the same time acknowledges the need for hospital-based dialysis units.

The current national guidelines address all five of the services addressed in this chapter. The MHSA has considered these guidelines and found it necessary in many cases to justify exceptions to them. In weighing and trying to balance cost, accessibility, quality and other characteristics, the MHSA has found, in many cases, accessibility to be extremely important. For example, if the guidelines for Radiation Therapy Units were to be literally followed, over 70 percent of the cancer patients would have to travel more than 50 miles for cancer treatment.

The primary theme running through all of these components is the concept of developing three strong tertiary care centers in Montana. These are Billings, Missoula, and Great Falls. Secondarily, if the local situation warrants, certain services should be developed in Kalispell, Bozeman, Butte, Helena and Miles City.

	Clinical Cardiovascular Laboratories & Cardiac Surgery Facilities	Radiation Therapy	Computerized Axial Tomography (CAT) Scanners	End Stage Renal Disease	Neonatal Intensive Care Units
CATEGORIES OF SERVICE					
Community Health Promotion					
Prevention & Detection					X
Diagnosis & Treatment	X	X	X	X	X
Habilitation & Rehabilitation					
Maintenance Services					
Support Services					
Enabling Services					
SETTINGS					
Community					
Home				X	
Mobile					
Ambulatory		X	X		
Short-Stay	X	X	X	X	X
Long-Stay					
Free Standing Support					
Addressed by the National Guidelines	X	X	X	X	X

TABLE 1

Subjects, Categories of Service and Settings Addressed in the Tertiary Care Components.

3.1
SUMMARY
CLINICAL CARDIOVASCULAR LABORATORIES AND CARDIAC SURGERY FACILITIES

This component deals with two highly specialized medical procedures to treat severe heart disease - cardiac catheterization and open heart surgery. Catheterization is a diagnostic procedure which often determines whether or not surgery should be performed. Four institutions in Montana, Billings Deaconess, St. Vincent (Billings), St. Patrick (Missoula), and Montana Deaconess Medical Center (Great Falls), have developed clinical cardiovascular laboratories in which cardiac catheterizations are performed. The necessity of two clinical cardiovascular laboratories in Billings is questionable.

Billings Deaconess and St. Patrick Hospital are also performing open heart surgery. There are no institutions with the capability, specialists or equipment to perform cardiac surgery on infants. Consequently, these guidelines address only facilities providing adult services.

Based on a simplistic model, the MHSA recommends that no further facilities should be initiating cardiac catheterization services in Montana. It is recommended that Montana Deaconess Medical Center investigate by 1985 the feasibility of developing a surgical service to complement its cath lab.

CLINICAL CARDIOVASCULAR LABORATORIES AND CARDIAC SURGERY FACILITIES

Goal:

Facilities offering cardiac diagnostic and surgical services should achieve and maintain a high level of expertise. In concert with this view, the following number of procedures should be performed annually by facilities providing these services:

- Cardiac Catheterizations - 300 caths/lab (Range - 100 to 500 caths)
- Open Heart Surgeries - 150 surgeries by each two (2) physician team at the end of three (3) years of operation. (Range - 100 to 350)

The number at the low end of the range provides a guideline for individual providers to perform and maintain proficiency. Operating below these levels for an extended period of time may result in decreased efficiency and lowered quality of service provided. The high number in the range is intended to represent average saturation levels for an individual laboratory or medical team.

Objectives:

1) The Montana Deaconess Medical Center in Great Falls should develop a cardiac surgery service by 1985.
2) Through 1985, no other facilities in Montana should develop these services unless the need for an additional service can be demonstrated.
3) By 1985, each cardiac surgery program in Montana should actively sponsor patient self-help groups, such as "Mended Hearts."

Recommended Review Criteria:

1) All facilities proposing to deliver either of these services must show it is economically feasible.
2) Institutions involved in cardiovascular surgery should have readily available a clinical cardiovascular laboratory. Clinical cardiovascular laboratories independent of an institution involved in cardiovascular surgery should be discouraged.
3) The following services should be available on a 24-hour emergency basis to the surgical team: Radiological services, standard laboratory facilities, full blood bank, bacteriological laboratory, autopsy, intensive care and dialysis.
4) Cardiac care of high quality should be provided as close to the patient's home as feasible, without compromising his opportunity for recovery. On the other hand, competing low volume programs in close geographic proximity are to be discouraged.
5) An adequate followup system established by the surgical team is necessary so patients are seen as often as required in the immediate post-discharge period and subsequently followed at appropriate intervals.
6) In order to provide quality nursing care for open heart surgery patients in the Intensive Care Unit, there should be no less than one (1) registered nurse for every open heart patient during the first 24 hours. In addition, optimal staffing requires adequate backup support from other registered nurses assigned to the ICU.

1.0 Background

In the evolution of cardiac surgery procedures, it is not clear whether medicine or surgery offers any definitive solution for patients with heart and/or blood vessel problems. In recent years, surgical techniques have been developed to treat selected heart conditions. These techniques can be classified as closed heart surgery (repairs are made without direct vision of the heart), open heart surgery (direct vision of the heart is necessary), and coronary artery surgery (adequate blood flow is restored to sections of the heart). Operations that employ one of these three techniques may require a cardio-pulmonary bypass (heart-lung) machine.

Some of the conditions which currently are amenable to surgical intervention are disabling angina pectoris* which is unresponsive to other medical treatment, acquired valvular disease or aneurysms, and congenital heart disease. In some cases, surgery is also used to treat preinfarction angina* and uncontrollable ventricular arrhythmia.*[1] A detailed list of cardiac disorders in which surgical management can be employed is contained in the Inter-Society Commission for Heart Disease Resources' Guidelines for Cardiac Surgery.[2]

Before the patient undergoes surgery the following diagnostic tests are performed: chest X-ray, electrocardiogram, standard clinical laboratory examinations, and exercise stress tests. Most candidates for cardiovascular surgery also have a cardiac catheterization (a small tube, catheter, is passed through a vein in the arm, leg or neck into the heart). A catheterization permits differential pressures within the heart and aortic artery to be measured. Blood gases are measured at various points throughout the procedure to provide information on possible lesions and heart efficiency. Contrast media may also be injected through the catheter to outline the shape of major veins and arteries and to further check the action of cardiac valves.[3]

Cardiac catheterizations should be performed in a clinical cardiovascular laboratory. To allow for procedural efficiency and patient safety, the laboratory should have a procedure room, a control room, an equipment room and areas for supporting facilities.[4]

Figure 1 illustrates that the number and rate of ischemic heart disease has gradually been decreasing since 1970. Further, the total number and rate of all heart diseases has stabilized or has been slightly decreasing since 1970.

"A recent doctoral thesis has estimated that the cost of cardiac surgery (1976 data) in an institution performing 150 surgeries a year is about $11,546. If fewer surgeries are performed, then the cost per operation is higher."[5]

2.0 Description of the Current Situation

Figure 2 shows the communities in which cardiac catheterizations and open heart surgeries are currently being performed. Four institutions in Montana, Billings Deaconess, St. Vincent (Billings), St. Patrick (Missoula), and Montana Deaconess Medical Center (Great Falls), have developed clinical cardiovascular laboratories in which cardiac catheterizations are performed. In conjunction with these facilities, Billings has one cardiac surgery team, Missoula has two, and Great Falls none.

The cardiac catheterization program at St. Vincent Hospital (Billings) was initiated in July, 1978. This disagrees with the guidelines in last year's plan. A study should be conducted to determine whether it is reasonable to have two catheterization laboratories in Billings.

* See Glossary

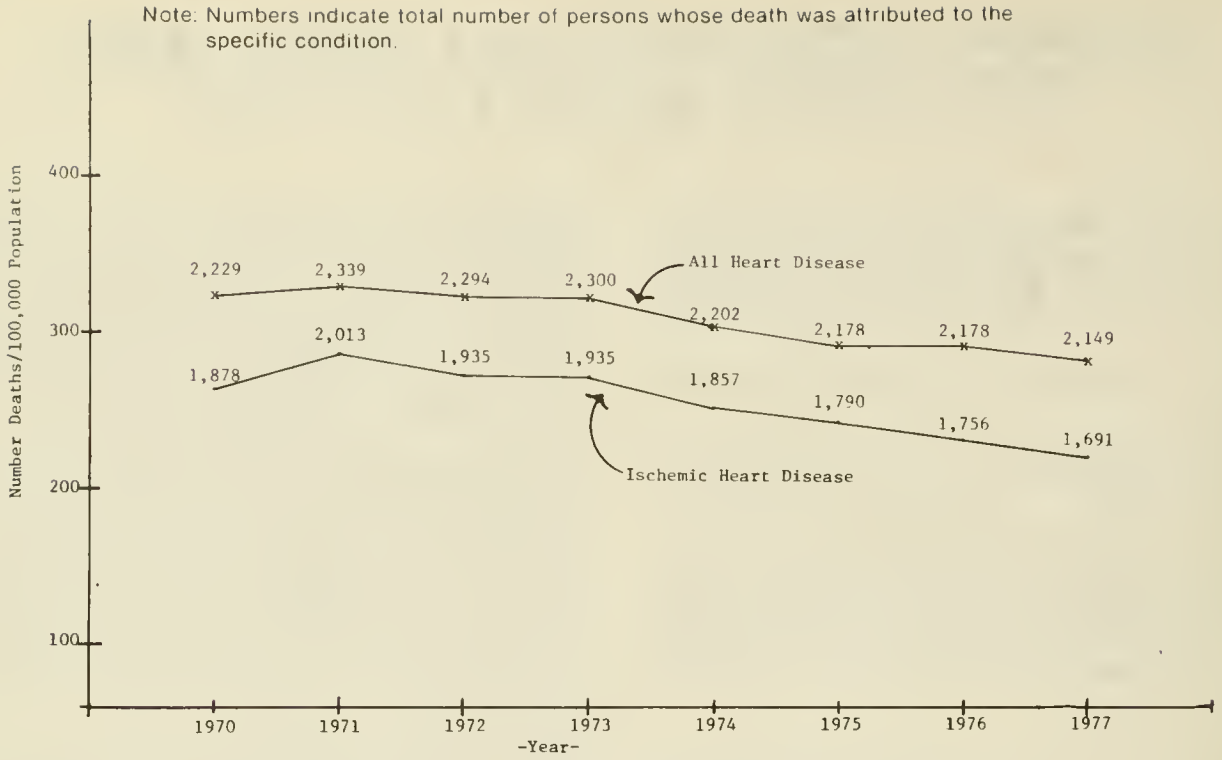


Figure 1 - Crude Annual Death Rates in Montana Due To Heart Disease & Heart Attack (1970-1977)

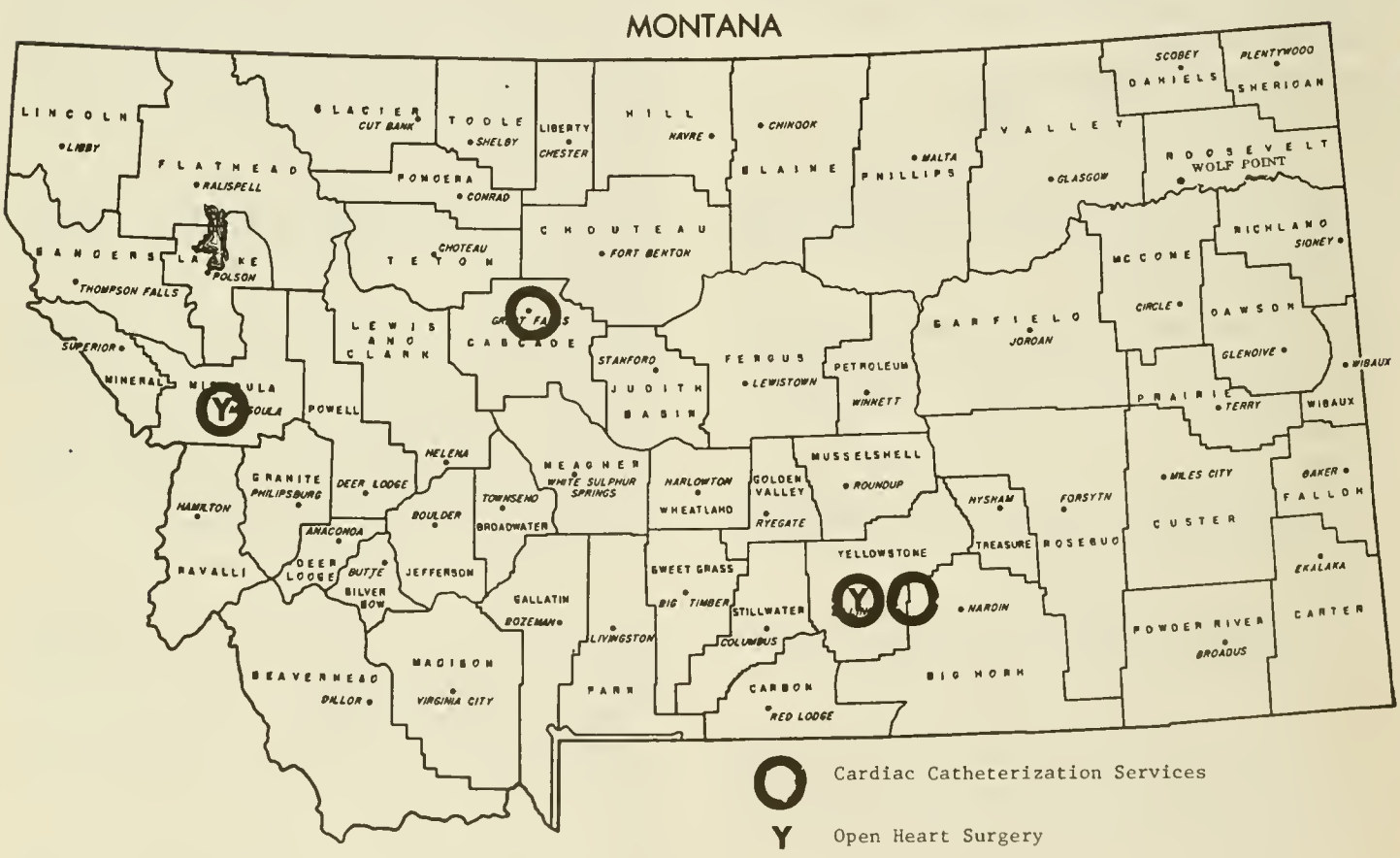


Figure 2 - Locations of Cardiac Catheterization & Open Heart Surgery Capabilities in Montana (1978)

There are no institutions with the capability, specialists or equipment to perform cardiac surgery on infants.

Data showing the utilization of these facilities is shown in Table 1. This information was obtained from the providers involved. As of 1977, the number of cardiac catheterizations performed in two institutions (Billings Deaconess and St. Patrick) were at or near acceptable levels. As the program at Montana Deaconess Medical Center in Great Falls and St. Vincent Hospital are relatively new, their number of cardiac catheterizations is less than the other two programs, but is continuing to grow. The utilization of the two catheterization programs in Billings should be monitored more closely to ensure both programs perform above the standards listed in the review criteria.

There are two Mended Heart chapters active in Montana — one each in Billings and Great Falls. Affiliated with the National Mended Hearts Association, these two chapters serve individuals who have had some type of open heart surgery. At chapter meetings, common problems of rehabilitation followingopen heart surgery are discussed. Approximately 60 individuals are members of the Billings chapter. The Great Falls chapter has a membership of approximately 40 individuals.

TYPE OF PROCEDURE AND TIME PERIOD	BILLINGS DEACONESS (BILLINGS)	ST. VINCENT (BILLINGS)	ST. PATRICK (MISSOULA)	MONTANA DEACONESS (GREAT FALLS)
Cardiac Catheterizations				
1972	15	-	-	-
1973	54	-	-	-
1974	69	-	87[1]	-
1975	240	-	257	104[2]
1976	434	-	382	105[2]
1977	505	-	451	204[2]
1978	486	111[3]	360	343[2]
Open Heart Procedures				
1972	18	-	-	-
1973	53[4]	-	-	-
1974	68	-	-	-
1975	95	-	-	39 referrals[2,5]
1976	174	-	94	49 referrals[2,5]
1977	178	-	134	60 referrals[2,5]
1978	166	-	112	110 referrals[2,5]

Table 1
Number of Cardiac Heart Surgeries Performed In Montana Hospitals

1) Started September 3, 1974,
2) Fiscal Year data — July to June,
3) St. Vincent Hospital (Billings) has been doing cardiac catheterizations since July 9, 1978,
4) Operating room closed for renovation for two months in 1973,
5) Approximately 10-12 patients referred each year for catheterizations and possible surgery because the physician felt it advisable that a surgical team be available in these cases of severely unstable or post-infarction angina.

	State	North-western	South-western	North Central	South Central	Eastern
Estimated 1976 Population	752,500	174,700	179,800	147,100	151,200	99,700
Expected Number Cardiac Catheterizations	1,043	242	255	207	206	132
Expected Number Cardiac Surgeries	391	91	96	78	78	50
Estimated 1985 Population	859,728	206,093	205,798	156,766	180,819	110,252
Expected Number Cardiac Catheterizations	1,262	347	333	221	235	126
Expected Number Cardiac Surgeries	473	130	125	83	88	42

Table 2 - Projected Number of Cardiac Catheterizations and Heart Surgeries to be Performed on Montana Residents in 1976 and 1985.

3.0 Future Resource Requirements

Estimate of Need

Because current medical opinion on the future value of surgery or medicine for treating heart disease is divided, and equipment costs of an open heart surgery team are continuing to increase, accurately predicting the number of cardiac procedures is difficult. However, the estimates shown in Table 2 indicate that by 1985 Montana can support three clinical cardiovascular laboratories. The conclusion to continue using the three existing clinical cardiovascular labs and cardiac surgery facilities is based on the methodology developed by Hartman, Hines and Wollard at the University of Iowa.[6]

- Based on national statistics, the annual number of hospital admissions per 1,000 population is about 17.6.
- Based on national statistics from Professional Activities Study (PAS) hospitals, the ratio of cardiac admissions to all hospital admissions is about 5.60 percent.
- About 14 out of every 100 patients admitted with diagnosed cardiovascular conditions are in need of cardiac catheterization services. (Based on an analysis of patient records from the cardiac catheterization unit at the University of Iowa Hospital, October, 1971.)
- Between nine to fifteen cardiac catheterizations must be performed to yield three to four surgical candidates.

These assumptions indicate there will be 1.38 cath patients per every 1,000 persons and between 20 and 44 percent of these cath patients will have open heart surgery. (The actual estimate assumes 37.5 percent.) The 1976-1978 data for Montana facilities shows 1.35 cath patients per 1,000 population and 33 surgeries being generated out of every 100 cath patients.

4.0 Justification for Exceptions to the National Guidelines

The National Guidelines (published March 28, 1978) indicate the following levels of utilization should be used as standards:

Cardiac Catheterizations

1. There should be a minimum of 300 cardiac catheterizations performed in any adult cardiac catheterization unit within three years after initiation.
2. There should be no new cardiac catheterization unit opened in any facility not performing open heart surgery.
3. There should be no additional adult cardiac catheterization unit opened unless the number of studies per year in each existing unit in the health service area is greater than 500.

Open Heart Surgeries

1. There should be a minimum of 200 open heart surgeries performed annually, within three years after initiation, in any institutions in which open heart surgery is performed for adults.
2. There should be no additional open heart units initiated unless each existing unit in the health service area is operating and is expected to continue to operate at a minimum of 350 open heart surgery cases per year in adult services.

The review criteria suggested for cardiac catheterization laboratories and presented at the beginning of this component corresponds to the levels identified in the National Guidelines. The minimum criteria for open heart surgery units are somewhat less than the National Guidelines (150 vs. 200). No criteria are specified for pediatric catheterization and surgery units because it is felt that through 1985 Montana will have an insufficient population for any hospital to justify such a capability.

In 1985 it is expected that 1,262 cardiac catheterizations will be performed in Montana — a number sufficient to justify between three and four units. However, it is questionable that both hospitals in Billings can each meet the minimum standards.

The lower number of procedures for open heart surgery units (150 procedures) is suggested for the following reasons:

1) The Intersociety Commission recommended that this capability be located as close as reasonable to the patient's home (MHSA adopted this recommendation as review criteria number 4.) The vast distances to be traveled in Montana require that three tertiary medical centers be developed (Missoula, Great Falls and Billings).

2) The Intersociety Commission indicates between three and four surgical candidates are identified for every nine to fifteen cardiac catheterizations performed (that is, between 20 and 44 percent of the patients having a cath also have surgery). In Montana this percentage appears to be fairly stable at 33 percent. However, if one compares the minimum standards of the two national guidelines, the ratio would be 66 percent.

3) The Intersociety Commission and the National Guidelines recommend that facilities providing one of these services should provide both of them. The MHSA has also adopted this guideline as review criterion number 2. Thus, this criterion, the minimum number of cardiac caths to be performed (300), and the ratio of surgeries to caths (33 percent), yield the minimum number of surgeries (100).

REFERENCES

1) Inter-Society Commission for Heart Disease Resources, Committeee on Coronary Artery Surgery, "Optimal Resources for Coronary Artery Surgery", **Circulation,** Volume 46, October, 1972, pp. A-325 to A-339.

2) J. C. Scannel, et al., "Report of the Inter-Society Commission for Heart Disease Resources, Optimal Resources for Cardiac Surgery, Guidelines for Program Planning & Evaluation", **Circulation,** Volume 52, November, 1975, pp. A-23 to A-41.

3) Hartman, Berhard; J. C. Hines and D. Wollard, "The Cardiac Catheterization Center: An Implementation Feasibility Study", in **Administration for the Effective Control of Heart Disease Two Compensatory Studies,** Health Care Demonstration Series No. 5, University of Iowa, 1973.

4) M. P. Judkins, et al., Report of the Inter-Society Commission for Heart Disease Resources, Optimal Resources for Examination of the Chest and Cardiovascular System, A Hospital and Resource Guideline, **Circulation,** Volume 53, No. 2, February, 1976, pp. A-1 to A-37.

5) Finkler, Steven, Ph.D., **Non-Profit Hospital Product Line Cost Assessment and Interfirm Allocation of Production,** Thesis in Economics, Stanford University, 1978.

6) Hartman, Hines, Wollard, **Op Cit.**

3.2
SUMMARY
RADIATION THERAPY

Radiation Therapy is one of the three basic approaches or modalities currently used in cancer treatment. Depending upon the type of disease, it can be used by itself or in combination with surgery and chemotherapy. The purpose of the guidelines in this component is to foster a practical network of cancer programs in Montana built around radiation therapy units.

The American Cancer Society estimates 2,100 new cases of cancer will be diagnosed in the state. (1976 estimate) Mortality due to cancer in Montana is somewhat less than in the nation as a whole. However, cancer is and has been the second leading cause of death in Montana.

The location, theoretical catchment areas and major referral support locations of the radiation therapy facilities in Montana are exhibited with utilization of those locations indicated.

The MHSA recommends two types of radiation therapy facilities be developed into a national network of cancer care in Montana. These are: correlated cancer management facilities serving 200,000 persons in a radius of 150 miles, treating 300 new cancer patients a year, providing 6,000 treatments per year; and cooperative management facilities serving 67,000 people in a radius of 100 miles, treating 100 new patients a year, providing at least 1,000 treatments per year.

The MHSA recommends that a correlated cancer management facility should be developed in Missoula by 1980, and a cooperative cancer management facility should be developed in Kalispell by 1980, if they can be shown to be economically feasible.

RADIATION THERAPY

Goals:

1. Two types of radiation therapy facilities should be developed into a network of cancer care in Montana. The first, a comprehensive cancer management facility, should be able to offer a full range of curative and palliative radiation therapy services. Each of these facilities should:
   - Serve a population of at least 200,000 persons in a radius of 150 miles;
   - Treat at least 300 new cancer patients a year; and,
   - Provide at least 6,000 treatments (patient visits) a year.

   The second, a limited cancer management facility, should primarily provide palliative treatments for local patients. They should:
   - Serve a population of at least 67,000 people in a radius of 100 miles;
   - Treat at least 100 new cancer patients a year; and
   - Provide at least 1,000 treatments (patient visits) a year.
2. Radiation therapy facilities should not be duplicated in any community in Montana.

Objectives:

1. A correlated cancer management facility should be developed in Missoula by 1980, if it can be shown to be economically feasible.
2. A cooperative cancer management facility should be developed in Kalispell by 1980, if it can be shown to be economically feasible.
3. By 1985, all cancer programs in Montana should foster the development of patient self-help groups.

Recommended Review Criteria For New Radiation Therapy Units:

1. The revenue generated by a new cancer program with a radiation therapy capability should be able to support its own direct operating costs, depreciation costs and its share of overhead. The break-even point should be reached at the end of the fourth completed fiscal year after initial operation, given prevailing prices. (See Table 1 for an example of typical unit costs for radiation therapy services.)
2. Facilities proposing to purchase high and medium voltage radiation therapy equipment should satisfy the standards stated in the MHSA goal statement.
3. Institutions with radiation therapy units should encourage their staffs to take a multidisciplinary approach to cancer care. Specifically, each facility applying for a supervoltage radiation therapy unit should have, or be committed to recruiting, the following medical specialties full time on their staffs:
   - Radiation Therapy
   - Medical Oncology
   - Surgery
   - Pathology
4. To monitor the quality of care being provided, each facility developing a cancer program should set up a tumor registry to follow-up each patient annually.
5. Each facility wishing to purchase either a linear accelerator or Cobalt-60 unit should make arrangements for appropriate radiation physics support. Specific standards for physics support are outlined in "A Code of Practice for X-Ray Therapy Linear Accelerators."
6. All radiation therapy departments should have appropriate dosimetry support.
7. Institutions developing either type of cancer program should be encouraged to get their programs approved by the American College of Surgeons.

Table 1 · Estimated (1977) Operating Costs for a Linear Accelerator as a Function of Number of Treatments Performed Per Year.

Number of Procedures Per Year	4,800	6,000	7,500
Number Patients Per Day	20	25	30
% Utilization	53.3	66.7	83.3
Operating Costs of a Typical Facility			
• Salaries	$ 66,760	$ 66,760	$ 66,760
• Physicist (Consulting Fee)	23,220	23,220	23,220
• Supplies	10,848	13,560	16,950
• Maintenance Contract	16,500	16,500	16,500
• Indirect Costs	29,332	30,010	30,858
• Depreciation	63,750	63,750	63,750
• Interest	30,110	30,110	30,110
• Malpractice	12,000	12,000	12,000
Total Annual Operating Costs	$252,520	$255,910	$260,148
Costs Per Procedure	$52.60	$42.65	$34.68

NOTE: This table is intended to serve as a baseline for the cost of radiation therapy to the average patient. It does not represent any facility, nor should it be used as a gauge to measure an individual applicant's proposal.

1.0 Background

Radiation therapy is one of the three basic approaches or modalities currently used in cancer treatment - the two others are surgery and chemotherapy (drugs). Depending upon the type of disease and its extent of development when diagnosed, these three approaches are used singly, sequentially, or in combination. For this reason, and because these three approaches to cancer treatment involve different medical specialities, the American College of Surgeons has recommended that local cancer treatment programs combine all three approaches in a cooperative multidisciplinary effort.

The purpose of these guidelines is to foster a network of cancer care within Montana. Special emphasis will be given to the future placement of radiation therapy units. Because of their costs, the purchase of units and their associated equipment will almost always require prior review and approval.

The different types of radiation therapy units can be categorized by the voltage range in which they operate:

- **Linear Accelerators** are classified as high energy units and operate with energies greater than three million volts. These machines have the ability to emit electrons as well as X-rays.
- **Cobalt-60 Units** are classified as medium energy machines because they operate in the range between 600,000 and two million volts. These machines are somewhat less precise and take more time to treat patients than the high energy units.
- **Orthovoltage X-Ray** machines operate in a range between 140,000 and 600,000 volts. These machines are primarily used to treat superficial tumors on or just beneath the surface of the skin.
- **Superficial X-Ray** units operate in a range between 140,000 and 600,000 volts. These machines are also used to treat skin cancer and other superficial lesions.

In cancer treatment programs, these units are used in two ways. First, if the disease has not spread, they are used to shrink and destroy the tumor (i.e., to cure the disease). Second, if the disease has spread, it is used for palliation, to ease the pain and improve the quality of life. In general, treating for cure demands much more technical expertise and precision than palliation.

Both linear accelerators and cobalt-60 units can be used to cure deep tumors. However, it appears that the trend is toward increased use of linear accelerators in curative programs. Consequently, these guidelines will assume that a comprehensive curative cancer program will build its program around a linear accelerator. A more limited program designed to emphasize palliative treatment would probably consider a cobalt unit.

Because of the vast distances involved, the sparse populations to be served, and the general lack of public transportation systems in Montana, this document will focus upon development of two different types of radiation therapy programs in Montana. The first, and more comprehensive program, would have the staff, equipment and resources to undertake curative treatments. The second type of program would be primarily used for palliation and to provide the less demanding types of treatment. As will be shown in the next section, this is the way radiation therapy facilities have already developed in Montana.

2.0 Description of the Current Situation

2.1 Incidence, Prevalence and Mortality

In Montana, no reliable local estimates of cancer incidence are currently available. The American Cancer Society estimates that 2,100 new cases of cancer were diagnosed in the state in 1976.[1] This statistic is derived from the third annual cancer survey conducted in 1971. Using the same data base, the National Cancer Institute estimates that the annual national rate for all newly diagnosed cases is 3.0 per 1,000 population.[2]

It appears that mortality due to cancer in Montana is somewhat less than in the nation as a whole. For example, the crude 1975 mortality rate from cancer was 147.7 in Montana and 171.1 in the nation. Nevertheless, cancer is and has been the second leading cause of death in Montana for the past several years.[3]

Table 2 · Utilization of Radiation Therapy Equipment in Montana (1978)

SOURCE: Unpublished data from the 1978 Hospital and Related Facilities Annual Report, Department of Health & Environmental Sciences, State of Montana, and from individual facilities.

	RADIATION THERAPY EQUIPMENT				NUMBER OF RADIATION THERAPY (COBALT AND LINEAR ACCELERATOR) PROCEDURES PERFORMED (1978)		
FACILITY	Mega-Voltage	Super-Voltage	Ortho-Voltage	Super-ficial	Inpatient	Outpatient	Total
NORTHWESTERN							
St. Patrick (Missoula)	-	CO-60	-	X	374	2,233	2,607
NORTH CENTRAL							
Columbus (Great Falls)	20MEV[1]	CO-60	X	X	1,193	5,876	7,069
SOUTHWESTERN							
St. James Comm. (Butte)	-	CO-60	-	-	229	989	1,218
Bozeman Deaconess	-	CO-60	X	X	-	-	435
St. Peter's (Helena)	-	CO-60	-	X	0	1,211	1,211
SOUTH CENTRAL							
Billings Deaconess	-	CO-60[2]	-	-	0	5	5[2]
Northern Rockies Regional Cancer Treatment Center (Billings)	12MEV	CO-60	-	X	-	7,765	7,765

1) Linear Accelerator became operational March 28, 1978, in a new facility. The new hospital was officially opened May 12, 1978. Of every 100 patients currently seen, about 70 are treated on the Linear Accelerator and 30 on the Cobalt-60 unit.

2) Service discontinued - May 31, 1978.

SOURCE:
Unpublished data from the 1978 Hospital and Related Facilities Annual Report, Department of Health & Environmental Sciences, State of Montana and from individual facilities.

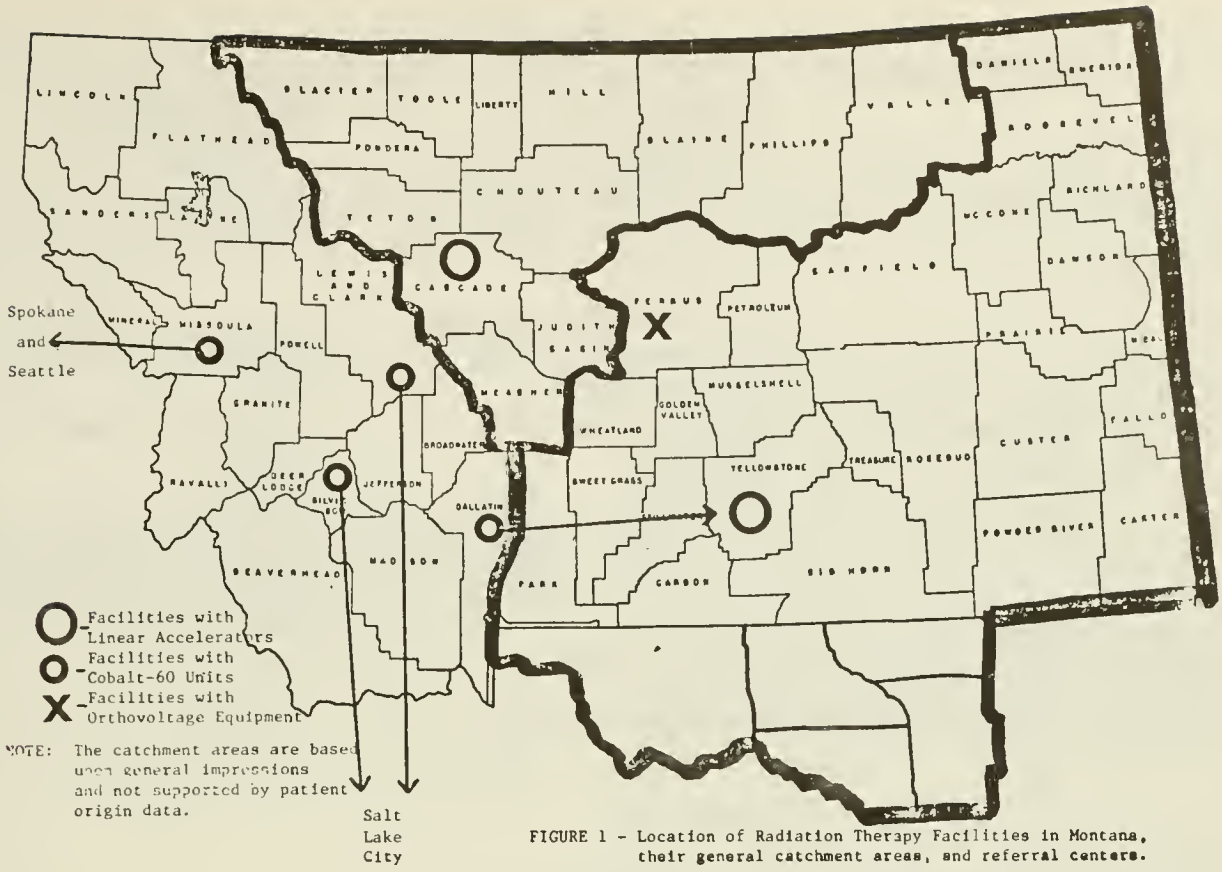

Spokane and Seattle
Salt Lake City
O-Facilities with Linear Accelerators
O-Facilities with Cobalt-60 Units
X-Facilities with Orthovoltage Equipment
NOTE: The catchment areas are based upon general impressions and not supported by patient origin data.

FIGURE 1 - Location of Radiation Therapy Facilities in Montana, their general catchment areas, and referral centers.

2.2 Current Inventory and Utilization Levels

Figure 1 shows the location, theoretical catchment areas, and major referral support locations of the radiation therapy facilities in Montana. The intent of this figure is to give the reader a general impression of the areas served by radiation therapy facilities in Montana. It is not intended to make a radiation therapy facility responsible for specific counties, and only those counties. In reality, catchment areas expand and contract continuously and often overlap.

Table 2 identifies the specific institutions, lists the types of radiation therapy equipment currently available and reports the 1977 utilization of these units. At the present time, two regional cancer programs have been developed in Montana, which apparently serve most of the cancer patients in their catchment area. These two programs are:

- Columbus Hospital in Great Falls
- Northern Rocky Mountain Cancer Treatment Center in Billings

These two programs both have linear accelerators and cobalt units to provide a full range of treatment capability. Both have two board certified radiation therapists and a physicist on staff. Both programs appear to be satisfying the national guidelines of serving populations of at least 150,000 people and performing at least 6,000 treatments a year.

Missoula has recently recruited a radiation therapist and a group of physicians have ordered a linear accelerator. St. Patrick Hospital in Missoula currently has a Cobalt-60 unit.

There are three other facilities in Montana which have Cobalt-60 units and provide limited services. These are:

- St. James Community Hospital (Butte)
- Bozeman Deaconess Hospital (Bozeman)
- St. Peter's Hospital (Helena)

At the present time, these units are primarily used for palliation and skin cancer treatments. Each of these units is operated under the direction of general radiologists. Each of these facilities is currently doing about 1,000 procedures a year.

The Central Montana Hospital in Lewistown has only an orthovoltage capability which is primarily used for the treatment of skin cancers. It too is operated under the direction of a general radiologist. Only about 100 procedures were performed on it in 1978.

3.0 Future Resource Requirements

Because of the vast distances to be traveled in Montana, it has been suggested that two types of radiation therapy facilities be encouraged within Montana. These are needed to provide reasonable access to quality cancer care without the patients and their families spending inappropriate amounts on traveling and temporary living arrangements. These would roughly correspond to two of the three types of facilities espoused in the 1968 report, **A Prospect for Radiation Therapy in the United States**[4]:

- Correlated Cancer Management Facilities, and
- Cooperating Cancer Management Facilities.

The general characteristics of each of these facilities are depicted in Table 3. It is envisioned that the correlated facility would be a comprehensive cancer program offering both curative and palliative services. In contrast, the cooperative facility would primarily offer palliative care and treatment of superficial tumors. The services of a cooperating facility should be coordinated with a nearby correlated facility or major cancer center.

Table 3

Desired Characteristics of the Two Types of Cancer Treatment Facilities

Characteristic	Correlated Cancer Management Facility (Comprehensive Care)	Cooperating Cancer Management Facility (Limited Care)
Primary Equipment	Linear Accelerator, Cobalt-60 Unit and Orthovoltage Machine	Cobalt-60 Unit and/or Orthovoltage Units
Support Equipment	Simulator	
Staffing	One or two full time Radiation Therapists, and one full time Radiation Physicist	At least one full time General Radiologist and Consultant Physicist
Related Medical Specialists available full time	Medical Oncology Surgery Pathology	Internal Medicine with interest in Oncology Surgery Pathology
Patient Load	300 new cases and 6,000 treatments (patient visits) per year	100 new cases and 1,000 treatments (patient visits) per year
Required Population Base[1]	200,000	66,667

1) Estimated on the basis that the incidence of cancer is 3.0 new cancer patients per year per 1,000 population and about 50 percent of all new cancer patients will require radiation therapy.

SOURCE: **A Prospect for Radiation Therapy in the United States**, October 24, 1968.

Table 4

Estimated Number of New Cancer Patients and Therapy Treatments in Proposed Radiation Therapy Facilities in Montana in 1985.

Type of Facility & Location	Estimated 1985 Population	Estimated New Cancer Treatments	Estimated R.T. Treatments Per Year
Correlated Cancer Management Facilities			
- Billings	280,834	843	12,637
- Great Falls	183,809	551	8,271
- Missoula	261,259	784	11,757
- Butte, Helena or Bozeman	205,798[3]	617	9,255
Cooperating Cancer Management Facilities			
- Kalispell	92,867[2]	278	2,085
- Butte	78,049[3]	234	1,756
- Bozeman	64,204[4]	193	1,445
- Helena	58,528[5]	176	1,317
Other Possible Sites-Limited Radiation Therapy			
- Havre	29,439[6]	88	662
- Lewistown	14,295[7]	43	322
- Glasgow	36,497[8]	109	821
- Miles City, Glendive or Sidney	41,717[9]	125	939

1) It is assumed that if a Linear Accelerator were placed in one of these cities and the other two Radiation Therapy Units were phased out, the catchment area would be roughly the Southwestern Subarea. In this case, the potential catchment areas for Missoula, Billings and Great Falls would be reduced
2) Kalispell's potential catchment area is assumed to be Flathead, Lake and Lincoln Counties.
3) Butte's catchment area is assumed to be Silver Bow, Deer Lodge, Powell, and Beaverhead Counties.
4) Bozeman's catchment area is assumed to be Gallatin, Park and Madison Counties.
5) Helena's catchment area is assumed to be Lewis & Clark, Broadwater and Jefferson Counties.
6) Havre's potential catchment area is assumed to be Hill, Blaine and Liberty Counties.
7) Lewistown's potential catchment area is assumed to be Fergus and Petroleum Counties.
8) Glasgow's potential catchment area is assumed to be Valley, Phillips, Daniels, and Roosevelt Counties
9) The potential catchment area for any of these three facilities is assumed to be primarily Custer, Prairie, Dawson and Richland Counties.

It is suggested that as the patient load increases towards 300 new cases a year and/or a change in the distribution of potentially curable patients occurs, the cooperative facility may evolve into a correlated program.

Although two types of cancer facilities or programs are proposed in this plan, Montana does not have, and will not have in the foreseeable future, communities sufficiently large to justify more than one radiation therapy facility.

3.1 Estimated Need

The estimated need for the two types of radiation therapy facilities in the various communities in Montana in 1985 is shown in Table 4.

The need for these facilities was estimated by the following procedures:

1. To determine the maximum number of correlated cancer management facilities (i.e., those facilities with linear accelerators) which could be supported, the state's 1985 projected population was divided by 200,000. Since the state's 1985 population is expected to be 853,000, this means that, at most, four such facilities could be justified.

2. The locations and capacities of existing radiation therapy facilities were examined and the population within a 150 mile radius was considered. As a result, the following communities were identified as potential sites for linear accelerators:

   - Billings
   - Great Falls
   - Missoula, and
   - Butte, Helena, or Bozeman

   In the last case, it is felt that a linear accelerator can be justified only in one of these communities and only if the other two would cease delivering radiation therapy services.

   Of the other three, only Missoula has not yet developed this capability.

3. Potential locations for cooperating cancer management facilities were investigated using the criteria of a population base of 67,000 and a service area radius of 100 miles. The following communities appear to satisfy this criteria:

   - Kalispell
   - Butte
   - Bozeman
   - Helena

   In addition, the following communities satisfy the distance (accessibility) criteria but apparently do not have the population base to justify a cooperative cancer program:

   - Havre
   - Lewistown
   - Glasgow
   - Miles City, Glendive, or Sidney

4.0 Justification of Exceptions to the National Guidelines

The stated national standards for Radiation Therapy facilities are:

1. Each megavoltage (Cobalt 60 or Linear Accelerator) unit should serve a population of at least 150,000 people and at least 300 cancer cases annually within three years after initiation.

2. No additional megavoltage units should be opened unless each existing megavoltage unit in the health service area is performing at least 6,000 treatments annually.

This plan suggests the establishment and maintenance of cooperative cancer management facilities (for palliative treatment of cancers) and is at variance with these national standards. Justification for exception in Montana is based upon two factors, access (travel time and distances) and costs.

Access

The national standards recognize that distance and travel time justify less stringent criteria for radiation therapy units in some communities. Radiation therapy is different from other tertiary services in that many repeat visits are needed to provide full treatment. It has been estimated that a full regimen of treatment requires an average of 20 visits. These treatments are given over an extended period of time and many are provided on an outpatient basis.

If the national standards are followed, a sizable proportion of cancer patients in Montana will be denied reasonable access to medical care. Each of the cooperative cancer facilities being suggested in the Montana HSP (Kalispell, Butte, Bozeman and Helena) are major population centers in Montana and are at least 90 miles from a city with a radiation therapy capability (see Figure 1). Approximately 21.5 percent of Montana's population lives in these four communities.

A patient traveling this distance at 55 miles per hour, spends between three and five hours on the road for each treatment. In some cases, the patient has a reaction to the treatment (nausea is a common aftereffect), which makes the trip home extremely difficult. In effect, following the national guidelines would deny treatment for a substantial portion of Montana residents.

Table 5 shows the estimated travel time for cancer patients living in selected communities and traveling to the nearest full service cancer treatment center. This table indicates that travel times range from three to over five hours. Many cancer patients in Montana currently go to cancer centers outside the state (primarily Spokane, Washington; Seattle, Washington; Salt Lake City, Utah; and Denver, Colorado). Air travel time to these cities is often longer than the times indicated in Table 5.

Costs

In addition, it appears that if the national standards were followed, without exception, the overall (system) costs of cancer treatment would actually be increased. Table 5 shows the estimated travel expenses to be incurred by each patient living in the communities being recommended for exceptions. It shows that travel expenses incurred by each patient would be between $600 and $900. Assuming that the average charge for a treatment is $50 and each patient needs 20 visits, the medical cost of treating a patient is about $1,000. This means that a cooperative facility could charge as much as 60 percent more per treatment and still save the patient money. All of the four proposed cooperative cancer facilities already have Cobalt 60 units and one would not expect the unit costs to be this high.

In addition, travel costs are not reimbursed by third party payors. The patient may be denied access to medical care because of fiscal constraints.

Potential Cooperative Cancer Facility	Nearest Cancer Program	Estimated 1976 County Population	Distance to Nearest Cancer Program (miles)	Travel Time[1] (hours)	Estimated Travel Costs per patient[2]
Kalispell	Missoula	45,400	115	4.18	$679.10-$782.00
Butte	Missoula	41,100	124	4.50	$682.16-$843.20
Helena	Great Falls	38,000	89	3.24	$605.20-$670.26
Bozeman	Billings	37,400	143	5.20	$688.62-$972.40

1) Estimated at 55 miles/hour.
2) It is assumed that each patient must have 20 treatments. Two estimates of travel expenses are used. First, it is assumed that the patient returns home after each treatment (cost = $0.17/mile). Second, it is assumed that the patient drives to the referral center, stays there until the treatments are completed (cost = $32.00 per day).

Table 5

Travel Time and Travel Expenses to be Incurred if No Cooperative Cancer Facilities Were Established in Montana.

REFERENCES

1) American Cancer Society **"76 Cancer Facts and Figures"** 1975.
2) Levin, D. L., et al, **Cancer Rates and Risks** U. S. Department of Health, Education and Welfare, Public Health Service, National Institute of Health 2nd Edition 1974, DHEW Publication No. (NIH) 76-691.
3) The Bureau of Records and Statistics, State Department of Health and Environmental Sciences, **Montana Vital Statistics, 1975.**
4) Subcommittee on Regional Medical Programs of Committee for Radiation Therapy Studies, **A Prospect for Radiation Therapy in the United States** final report, October, 1968.

3.3
SUMMARY
COMPUTERIZED AXIAL TOMOGRAPHY (CAT) SCANNERS

As a diagnostic tool for a wide range of head and body anomalies, the CAT scanner is a computerized X-Ray system which can produce cross-sectional pictures of the head or body, including pictures of organs obscured in conventional X-Ray photographs.

There are presently two whole body scanners in Montana, one in Great Falls at Columbus Hospital and another in Billings in the offices of Eastern Radiological Associates. A head scanner is also located at St. Patrick Hospital in Missoula.

Standards are suggested by MHSA, and based on this criteria it is recommended that no more than three CAT scanners should be located in Montana until utilization levels can no longer accommodate patient demand. Through 1985 any new CAT scanners must be justified based on cost effectiveness, scope and value of services, accessibility and availability of qualified personnel. Third party payors should be encouraged to include whole body CAT scans as a reimbursable item.

COMPUTERIZED AXIAL TOMOGRAPHY (CAT) SCANNERS

GOAL:

The following standards are suggested:

1) A whole body CAT scanner should operate at a minimum of 1,000 medically necessary scans per year for the first year of operation and 1,500 medically necessary scans per year for the second year of its operation and thereafter.
2) A head CAT scanner should operate at a minimum of 900 medically necessary scans per year for the first year of operation and 1,350 medically necessary scans per year for the second year of its operation and thereafter.
3) There should be no additional scanners approved unless the operators of the equipment will set in place data collection and utilization review systems and make that information available to the MHSA on an annual basis.
4) No additional CAT scanners (head and body or head only) should be approved for any geographic service area in Montana unless the utilization of each existing scanner in the geographic area will not decrease below the second year levels of (1) and (2) above as the result of the new service.

Based upon these criteria, no more than three CAT scanners should be located in Montana until utilization levels can no longer accommodate patient demand for CAT services presently being provided.

Objectives:

1) Through 1985 any new CAT scanners must be properly justified for placement in Montana based on the following criteria: cost effectiveness, scope and value of services, accessibility, and availability of qualified personnel.
2) Head scanners may be placed within the same service area as whole body scanners only if the new service does not decrease the total scans of the older service to a level below 1,500 scans a year or is otherwise properly justified.
3) Third-party payors should be encouraged to include whole body CAT scans as a reimbursable item.
4) CAT Scanners in private offices which are consistent with the Health System Plan should be deemed in compliance with certificate of need regulations for reimbursement purposes.

Recommended Review Criteria:

1) Any facility wishing to purchase a CAT scanner (head or body) should be able to show it financially feasible.
2) A CAT scanner should be available for use at least 40 hours a week and more as demand or emergency situations dictate.
3) Because of the expensive nature of CAT scanners, it is impractical to have one in every hospital. Therefore, CAT scanners should be geographically distributed to assure accessibility, high utilization and reasonable patient charges.
4) In order to assure continuity of care, CAT facilities should have written agreements with providers outside the facility assuring that those providers have equal access to the scanner (for either inpatients or outpatients), cooperative use of the scanner and prompt reporting of CAT results to referring physicians.
5) Because the full range of CAT's uses is unknown and utilization levels are necessary to maintain proficiency in CAT scanning, utilization and quality review groups should be established. The Professional Standards Review Organization, a legally mandated peer review group, should perform this function.
6) Hospitals installing CAT scanners should have the following service capabilities: a diagnostic radiologist with special interest and competency in CAT; a neurologist or neurosurgeon; a thoracic and/or cardiovascular surgeon; a urologist, and adequate support staff.

1.0 Background

First introduced in England in 1972, CAT has become accepted as a diagnostic tool for a wide range of head and body anomalies. The CAT scanner is a computerized X-ray system which can produce cross-sectional pictures of the head or body, including pictures of organs obscured in conventional X-ray photographs.

CAT scans are becoming the primary study of choice (except in cases where specific diseases are to be ruled out by another method) over routine diagnostic studies such as radioisotope brain scanning, cerebral angiography, pneumoencephalography, and ventriculography.* Electroencephalography is in a separate field from X-ray and is most often used in adjunct to those studies. CAT scanning is the primary study of choice because:

a) it is the least expensive, as it can be done on an outpatient basis and the others are either more expensive to begin with or require up to a week's hospitalization.
b) the diagnostic ability of CAT scanning can eliminate the need for further, more complicated and more expensive studies. It also provides a means to study patients whose clinical history does not warrant a gauntlet of testing but for whom the clinician feels a positive answer is needed.
c) some examinations which were done routinely before CAT scanning, such as pneumoencephalography and radionuclide brain scanning have been almost completely eliminated as primary examinations in institutions possessing CAT scanners.

Currently, most of the new scanners being installed are full body scanners, even though in practice body scanners are used primarily for head scanning. Typical usage of body scanners indicates that they are more useful for the initial detection of disease in some organs, and more useful for evaluating already detected diseases in other organs.

Both the head and body scanners work by rotating around the area to be scanned and sending out X-ray beams. As these beams pass through the scanned area, they are detected by a device on the other side. The detector device registers the amount of radiation received and this information is fed into a computer, which, through a process of simultaneous equation solving, arrives at a coefficient of X-ray absorption for each portion of the scan. The CAT scanner then gives a digital readout of the different densities of the area scanned. Each density valued is precoded to show a different shade of gray (or color on color pictures) and the computer finally arrives at a two dimensional picture of the area scanned, with third dimension calculations of the position of an object within the area scanned being possible.

* See Glossary

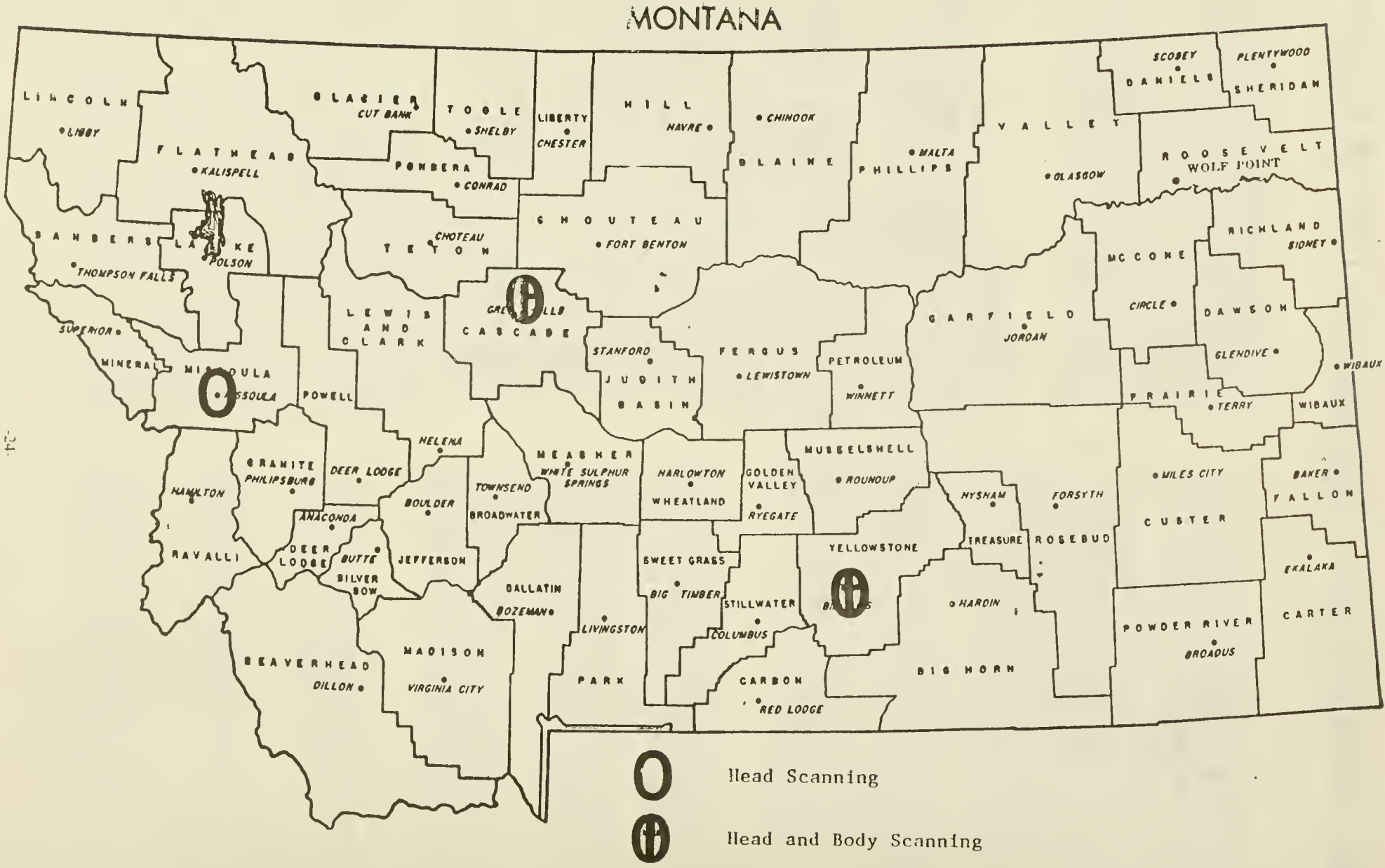


Figure 1 - Location of CAT Scanning Capabilities in Montana (1978)

Facility	Estimated County Population (1977)	Procedures Performed (1978) Head Scans	Body Scans	Total	Procedures 1,000 Population Annualized
St. Patrick Hospital[1] (Missoula)	66,800	1,676	0	1,676	25.0
Columbus Hospital[2] (Great Falls)	84,400	617	0	617	7.3
Eastern Radiological Associates (Billings)	100,700	934	115	1,049	10.4
	State Average	13.3			

1) Operational November 21, 1977.

2) Operational September, 1977. CAT procedures were performed for only selected patients until the new facility was occupied in May, 1978, and all supportive services such as ICU, CCU, Emergency Room and Radiology were available.

TABLE 1 - CAT Procedures Performed in Montana, 1978

Source: Hospital Annual Reports and Personal Communication

2.0 Description of the Current Situation

Figure 1 shows the location and type of CAT scanning units in Montana. There are presently two whole body scanners in Montana, one in Great Falls at Columbus Hospital and another in Billings in the offices of Eastern Radiological Associates. St. Patrick Hospital in Missoula has a head scanner. Table 1 indicates the number of CAT procedures performed at these institutions in 1978. All have now been in operation since late 1977.

Based upon data submitted to the MHSA, 96 percent of the scans performed in Montana are head scans. Nationally, 55 percent are head scans. In facilities having only a body scanner (i.e., no dedicated, separate head scanner), 76 percent of the scans are performed on the head.

Nationally, there are 5.7 CAT scanners for every million persons. By state, this number ranges from 2.1 scanners per million population (South Carolina) to 15.9 scanners per million population (Washington, D.C.). Montana with its three scanners has a ratio of 4.1.

3.0 Plan for Future Placement of CAT Scanners

As CAT scanning is a relatively new service in Montana, service areas and referral patterns have not been extensively developed. Service areas and referral patterns for CAT service areas should continue to be examined in the future. As a facility offering CAT scanning must necessarily provide a large commitment of time, staff, monies, etc. to the CAT scanning operation, it is important to adequately understand developing service pattern and CAT developments. Further, trends in type of scanner purchased, utilization, scanner ownership, etc. will all influence the development of CAT scanning services in Montana.

Three methods for determining the need for CAT scanners have been used by other health planners and health providers.

These methods are:

- Minimum population needed to support a scanner.
- Number of other diagnostic procedures currently being performed.
- Geography.

To be statistically accurate, a projection of the minimum population needed to support a scanner should be based on either past utilization trends or on the incidence of disease among the population. Because CAT is a new technology, past utilization trends are not available. Incidence of disease also is difficult to determine because the full range of diseases detected by CAT is unknown. In Montana, incidence data is not maintained on even those diseases, such as neurological disorders, which CAT has proven useful in diagnosing.

Other states have used figures ranging from one scanner per 100,000 population to one scanner per HSA area, which in Montana, is the entire state. Montana's neighboring state, Idaho, has used a population figure of 250,000.[1]

A second method for estimating the number of scanners required in Montana is the number of other diagnostic methods currently being performed. Where CAT has been installed, it has at least partially replaced some neurological procedures and is being used in addition to others. Table 2 shows the number of cerebral angiograms, pneumoencephalograms and brain scans performed in selected Montana cities between 1975-1978.

The Comprehensive Health Planning Council of Northern Virginia [2] estimates that 20 percent of cerebral angiograms, 75 percent of pneumoencephalograms and 90 percent of nuclear brain scans will be replaced by CAT scans. Using this formula, one can arrive at the total number of head scans that can be expected in an area.

Head Scans = .2C + .75P + .9B

where C = cerebral angiograms
P = pneumoencephalograms
B = nuclear brain scans

Data on the number of expected body scans is more difficult to obtain because, again, the full scope of body scanning's uses is unknown. Those institutions which have CAT body scanners have been using their machines primarily for head scanning. The ratio of head scans to body scans also varies from one institution to another, but generally from 75 to 90 percent of the scans done are head scans.[3]

Figuring that 25 percent of the total scans would be body scans, one can add this to the previous formula to arrive at a total number of scans to be expected on a body scanner:

Total Scans = 4/3 Head Scans = 1.33 Head Scans

Using this formula, Montana as a whole could support three scanners, but no individual hospital could support a scanner without referrals from other hospitals. This means that Montana hospitals must share CAT services.

This brings one to the third method for determining need for a CAT scanner - geography. In Montana, there are three main medical service areas for specialized care: Missoula, Great Falls and Billings. Butte, Helena, Kalispell, Havre and Miles

City	Cerebral Angiograms				Pneumoencephalograms				Brain Scans			
	1975	1976	1977	1978	1975	1976	1977	1978	1975	1976	1977	1978
Missoula	279	416	387	76	123	111	51	4	747	925	916	343
Kalispell	38	45	12	31	2	4	0	0	140	237	187	157
Butte	4	0	0	0	0	0	0	0	304	102	471	522
Western Region	321	461	399	107	125	115	51	4	1191	1264	1574	1022
Great Falls	405	397	320	28	111	64	40	28	1344	1365	1423	2657
Conrad	0	0	0	0	0	0	0	0	55	42	47	45
Helena	2	0	50	0	0	0	0	0	612	450	394	385
Havre	0	0	0	0	0	0	0	0	155	219	263	284
Lewistown*	0	0	0	0	0	0	0	0	20	34	49	47
Northern Region	407	397	370	28	111	64	40	28	2186	2110	2176	3418
Billings	172	205	12	188	43	32	0	11	1042	882	299	365
Miles City	6	0	0	12	0	0	0	0	0	70	56	35
Bozeman	0	0	0	0	0	0	0	0	121	158	169	278
Southern Region	178	205	12	200	43	32	0	11	1163	1110	524	678
Montana	**906**	**1063**	**781**	**335**	**279**	**211**	**91**	**43**	**4540**	**4484**	**4274**	**5118**

* Lewistown is 105 miles from Great Falls and 128 miles from Billings, making it an area where regions will overlap.

Table 2 · Number of Diagnostic Procedures Performed in Montana Cities, 1975-1978.

SOURCE: Data from unpublished surveys conducted by the Department of Health and Environmental Sciences (1975 and 1976) and the Montana HSA (1977 and 1978)

City are secondary service areas for specialized care. The Missoula area includes all of the area in Montana west of the Continental Divide; the Great Falls area includes the northern half of the state east of the Divide and the Billings area includes the southern half of the state east of the Divide. Some overlap exists in all three areas. Using the formula above, only the Great Falls area has more than 2,000 projected scans. But, because Montana encompasses a large geographic area, a CAT scanner in each of these areas seems appropriate to assure accessibility.

All three of the above methods for determining need for CAT scanners contain flaws, largely because need projections are limited by CAT's newness and the many unknown factors surrounding its uses. However, at least the latter two methods tend to point toward a need for three CAT scanners in Montana. More than three CAT scanners in the state, at this time, appears to be excessive because of the relatively sparse population in the state, the relatively high cost involved in providing CAT and the possibility that current machines may become obsolete within a short period of time.

Table 3 summarizes the number of scanners required in Montana and each of the three main medical service areas, according to the methods used above for estimating service needs.

4.0 Justification for Exceptions to the National Guidelines

The following standards for CAT scanners were published as part of the National Guidelines:

1) A Computerized Axial Tomographic Scanner (head and body) should operate at a minimum of 2,500 medically necessary patient procedures per year for the second year of its operation and thereafter.
2) There should be no additional scanners approved unless each existing scanner in the health service area is performing at a rate greater than 2,500 medically necessary patient procedures per year.
3) There should be no additional scanners approved unless the operators of the proposed equipment will set in place data collection and utilization review systems.

This plan deviates from these guidelines and proposes to use less stringent criteria, specifically 1,500 head and body scans for whole body scanners and 1,350 scans for units doing head scans only. The following presents the rationale behind this departure from the National Guidelines.

As elsewhere in the United States, every effort must be made to contain costs of CAT scanning procedures while providing an acceptable level of service. Appropriate utilization of the three CAT scanners presently serving three geographical areas will prevent needless duplication and limit unnecessary health care costs.

Montana's geography and the location of its three population concentrations lend themselves to the location of the three scanners where they are presently located. Levels of 1,000 scans for whole body and 900 head-only scans for the first year, and 1,500 whole body scans and 1,350 head-only scans for the second and successive years are appropriate exceptions from the 2,500 level as patient accessibility, quality of care (measured by utilization necessary for proficiency), and cost (measured by alternatives outside of Montana) indicate that the people of Montana will be adequately served by these levels.

Cost studies developed in major metropolitan areas indicate that higher utilization levels result in lower cost per procedure of CAT scans. As these studies are used both for determining minimum planning guidelines and maximum federal reimbursement mechanisms, the conclusion of

Area	One scanner per 250,000 population[1]	Number of other procedures	Geography
Montana	3.4	3	3
Western Montana (Missoula)	1	0	1
Northern Montana (Great Falls)	1	1	1
Southern Montana (Billings)	1	0	1

1) Montana's Estimated Population in 1985 is expected to be 859,728. None of the subareas, however, are expected to have populations over 250,000.

Table 3 - Estimated Need for CAT Scanners in Montana in 1985.

these studies is inappropriately applied to Montana. National studies do not, due to their metropolitan bias, take into account accessibility requirements and quality of care requirements that would be denied to the people of Montana if conclusions from national CAT studies were directly applied to Montana.

As the operators of CAT scanners in Montana have informally agreed to submit to the Montana Health Systems Agency summaries of the data collected, the MHSA can continue to adequately plan the distribution and use of CAT scanners in its health service area.

REFERENCES

1) American Association of Comprehensive Health Planning, **CAT Scanning**, November, 1976.
2) Comprehensive Health Planning Council of Northern Virginia, "Capital Expenditure Review for the Purchase of a Computerized Tomography (CAT) Scanning Device," November 19, 1975.
3) United States Congress, Office of Technology Assessment, **Op. Cit.**

3.4
SUMMARY
END-STAGE RENAL DISEASE (ESRD)

End stage (chronic) renal disease is defined as that stage of advanced kidney failure or renal functional impairment which can no longer be managed by medication or diet modification and requires dialysis or transplantation for the maintenance of life.

At present there are four acute general hospitals in Montana which provide ESRD care. They are located in Helena, Great Falls, Billings and Missoula.

The incidence of end stage renal disease is currently about 60 new patients per million population per year. About 20 percent of these are transplant candidates; the remaining patients and those persons rejecting their transplanted kidneys must be dialyzed three times a week to stay alive. About half can be trained to perform home dialysis, while the other half must go to a local institution to have it done.

The MHSA recommends that home self-dialysis be emphasized in Montana. At the same time, it is recognized that facility capability must also be developed and maintained. Based on estimates in the component, it is recommended that Kalispell consider developing this service and Butte, Bozeman, Southeastern and Northeastern Montana study whether or not it is feasible. Prevention programs such as hypertension screening efforts should also be emphasized in the next five years.

It is estimated that even with 40 percent of the Montana ESRD patients on home dialysis, the number of facility-based dialysis units will still have to be increased by 1985. Preference should be given to expanding existing facilities over establishing new units when this is done.

END STAGE RENAL DISEASE (ESRD)

GOALS:

1. Home self-dialysis programs should be promoted in Montana. Although there is a strong indication the demand for facility hemodialysis will increase through 1985, at least 40 percent of the ESRD patients in each facility's catchment area should be on home dialysis.
2. Dialysis facilities which are geographically accessible to ESRD patients and yet economical should be developed.
3. A statewide program dealing with the prevention of end stage renal disease should be developed in Montana.

OBJECTIVES:

1) By 1985 programs should be developed for home dialysis patients to provide the whole range of social services. Facilities providing ESRD dialysis services should provide or contract with agencies that do provide habilitative services.
2) To urge physicians to implement the provisions of PL 95-292 so that payments to an individual assisting the patient in the dialysis procedures are a reimbursable expense. Home health agencies, for example, could provide backup assistance to home dialysis patients on an occasional basis.
3) By 1985, Kalispell should consider developing an ESRD in-center capability. The feasibility of delivering these services in Butte, Bozeman, Northeastern and Southeastern Montana should be studied.
4) By 1983, hypertensive screening programs with methods of referral and followup should be developed in Montana.
5) By 1983, educational programs directed to physicians and patients should be developed to emphasize the benefits of early diagnosis, treatment and management.
6) Research in the field of hypertension and kidney disease should be supported to aid in the development of preventive measures against end stage renal disease.
7) To educate the public about the importance of kidney transplantation as a treatment method and the desirability of donating kidneys for this purpose.
8) By 1985, explore the possibility of Montana participating in a cooperative venture with major transplant centers in the securing, typing and transferring of cadaver kidneys.

RECOMMENDED REVIEW CRITERIA FOR END STAGE RENAL DISEASE:

1) Existing maintenance dialysis units should be operating at or near optimal utilization before new units are considered. Optimal utilization is considered to be 80 percent for two treatment runs per day, six days a week. Facilities presently offering ESRD units should expand this service before new units are established elsewhere.
2) Facilities proposing ESRD services should have provisions to assure that all modes of treatment and rehabilitation are available to all individuals with end stage renal disease.
3) Proposed renal support systems in Montana should maintain high quality standards in accordance with regulations set forth in detail in the Federal Register.
4) All ESRD units for chronic in-facility dialysis should have at least two stations.
5) All ESRD units should be supervised by a physician trained in kidney diseases (i.e., a nephrologist).

1.0 Background

End stage (chronic) renal disease (ESRD), or irreversible kidney failure, is defined as that stage of advanced kidney failure or renal function impairment which can no longer be favorably influenced by diet modification and medication.[1] Nationally, about 60 persons in each million are struck with this condition each year.[2] Glomerulonephritis (characterized by damage to the structure within the kidney) accounts for approximately 40 to 60 percent of all patients in dialysis or transplant programs; however, more and more ESRD patients have other complications too, primarily diabetes.

There are currently two methods of treating ESRD, -transplantation or dialysis. A kidney transplant involves taking a donor kidney and surgically implanting it in the ESRD patient. Between one-fourth and one-half of the patients with ESRD are considered suitable candidates for transplantation.[3] However, far fewer actually have the operation - the problem being that suitable donor kidneys are not available. At the present time, no Montana facilities do kidney transplants. Most Montana patients go to Seattle, Portland, Denver or Minneapolis for a transplant.

The other treatment mode for ESRD is dialysis. Dialysis is a process in which waste products are removed from the body by diffusion from one fluid compartment to another across a semi-permeable membrane. Hemodialysis and peritoneal dialysis are the two types of dialysis in clinical usage. Hemodialysis is the process by which blood is passed through an artificial kidney machine and the waste products diffuse across a man-made membrane into a bath solution known as dialysate. The cleansed blood is then returned to the patient's body. In peritoneal dialysis, the waste products pass through the peritoneal membrane into the peritoneal (abdominal) cavity where the dialysate is introduced and removed periodically.

Dialysis is used for both acute and chronic renal failure. Acute renal failure can result from drug ingestion, as a complication of major surgery, or as a result of an accident. In such cases, the patient is administered hemodialysis as an inpatient. However, the emphasis of this component is on the use of dialysis in treating the chronic ESRD patient. Regular (chronic) maintenance dialysis can be done in a facility on an outpatient basis or at home. It can be performed by the patient himself (after four to eight weeks of intensive training) or by a trained attendant. Because problems may arise, some other knowledgeable person should be present during the session. Dialysis treatments are typically scheduled two or three times a week for four to ten hours.

For many stable ESRD patients, home dialysis appears to be the preferred method of treatment. Home dialysis, in maintaining the patient within his normal social environment and in promoting his independence from illness-oriented hospital care, offers the patient the best treatment modality for a productive and meaningful life.

In addition, home dialysis is less expensive. A recent study indicates the patient cost for facility dialysis is $24,500 per patient per year. For home dialysis, the first year's cost is $17,000 and $15,400 for each subsequent year.[4] According to a Government Accounting Office report, the cost per patient per year on home dialysis ranges from $8,000 to $12,000 compared to a yearly per patient cost of $15,000 to $30,000 for institutionally based dialysis.[5] Cost information supplied by an ESRD patient in Missoula indicates the cost of home dialysis is approximately $54.00 per treatment run, or about $8,400 per year.[6]

However, not all patients are candidates for home dialysis. Those persons living alone or without family support

(physical, emotional, psychological and intellectual), as well as those who are too ill to manage at home, are not likely home dialysis candidates. When both patient and partner work full time, center dialysis may be more convenient and less time consuming. If patient or partner has to quit work or work part-time, it may not be economically feasible or desirable to go on home dialysis if a center is convenient. Therefore, facilities providing chronic services need to be made available.

ESRD is unique in that Medicare (P. L. 92-603) covers nearly all costs of care incurred by ESRD patients. The cost of this program was $600 million in 1977 and is expected to increase to $1.9 billion in 1987.[7] Until recently, the ESRD program imposed disincentives on home dialysis. The passage of a new law (P. L. 95-292) in 1978 is intended to erase those disincentives.

It should also be emphasized that much ESRD can be prevented or delayed. Hypertension screening programs to detect renal problems as well as complete evaluation and referral by primary physicians who find evidence of early renal disease can reverse or delay ESRD with currently available therapy.

2.0 Description of the Present Situation

2.1 Incidence, Prevalence and Mortality

The incidence of ESRD (the number of new patients diagnosed each year) in Montana is about equal to the national average of 60 new cases per million per year. Between January and June, 1979, 22 new cases of ESRD were diagnosed in Montana — an annual incidence rate of 57.9 per million. Figure 1 shows the number of ESRD patients currently (1978) in each county.

2.2 Current Inventory and Utilization Levels

Public Law 92-603, Section 2991[8] requires that all facilities providing ESRD services be organized into coordinated systems (networks) for the delivery of care, to be eligible for Medicare reimbursement. The state of Montana is serviced by the End Stage Renal Disease Regional Network Coordinating Council #2, based in Seattle. Portions of northern Wyoming refer patients to Montana. Most candidates for transplants from Montana are referred to the University of Washington, the University of Oregon, the University of Col-

	St. Patrick (Missoula)	Columbus (Great Falls)	St. Peter's (Helena)	Billings Deaconess	State Total
Patient Census (June 1978)					
Transplants	6	3	1	13	23
Home Dialysis	15	7	3	6	31
Center Dialysis	1	6	9	17	33
Total	22	16	13	36	87
Patient Census (1/79 to 7/79)					
New Patients	2	3	6	10	21
Undergoing Transplant	0	1	2	0	3
Ungergoing Home Training	1[1]	0	1	3	5
Patients on Center Dialysis (6/30/79)	1	13	9	22	45
Utilization Statistics					
Total Number of Dialysis Stations	2	7[2]	3	7[3]	19
Number of Facility Dialyses Performed	185[4]	1263[5]	1493[6]	2792[5]	5733
Number of Home Training Dialyses Performed	0	0	0	122	122
Percent Utilization (1/79 through 6/79)[7]	17.3%	80.8%[8]	83.5%	90.7%	-

1) No in-house training capability; most Missoula patients are trained in Spokane.
2) Columbus Hospital has recently been approved to expand from 4 to 7 stations. One will be used for home training.
3) Six are used for in-house dialysis and one for home training.
4) For the period 4/78 through 3/79.
5) For the period 3/78 through 2/79.
6) For the period 2/78 through 1/79.
7) For full utilization, it is assumed that a single dialysis station can perform two runs a day, six days a week, 52 weeks a year. NCC #2 does not include stations used for home training in the utilization calculations.
8) Calculation based on four operating stations.

Table 1 - ESRD Utilization Statistics in Montana (1978 and 1979)

Source: Unpublished data from ESRD Network Coordinating Council (NCC) #2

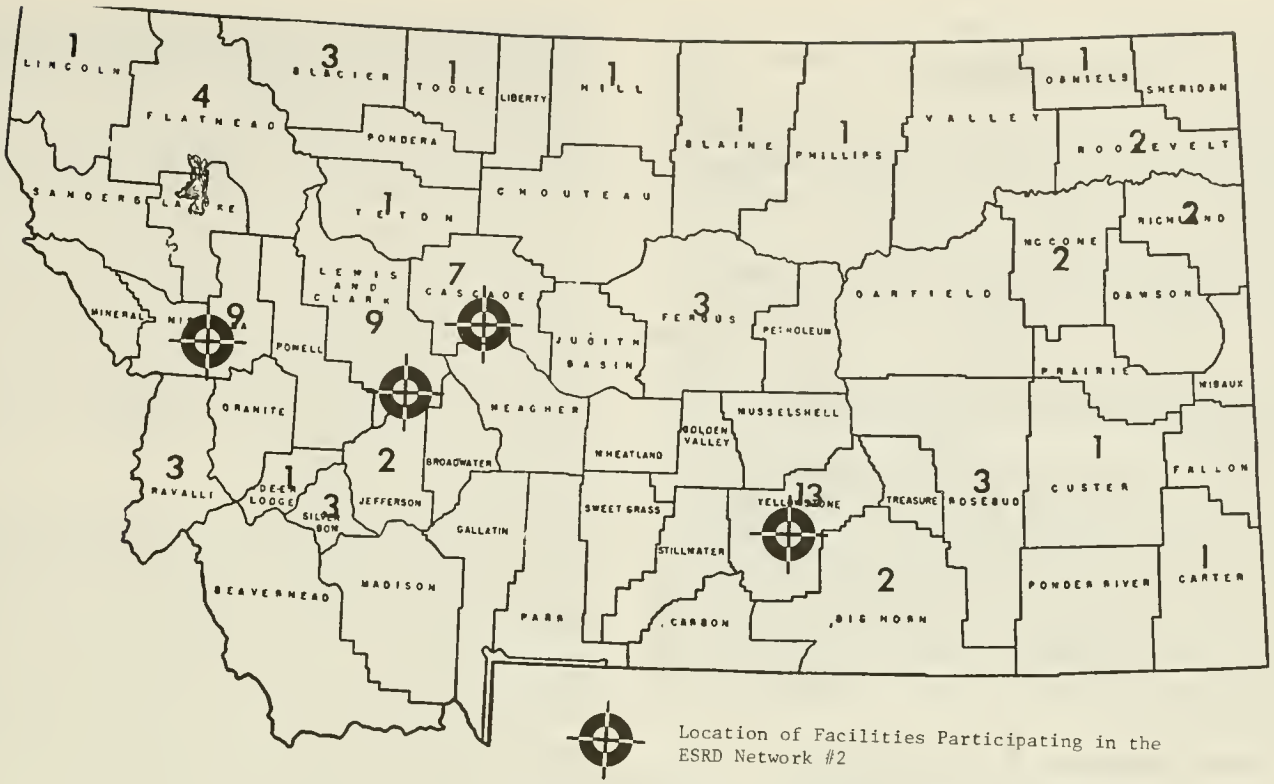


Figure 1 - ESRD Patients and Facilities in Montana (1978)

Source: Unpublished data from ESRD Network Coordinating Council #2

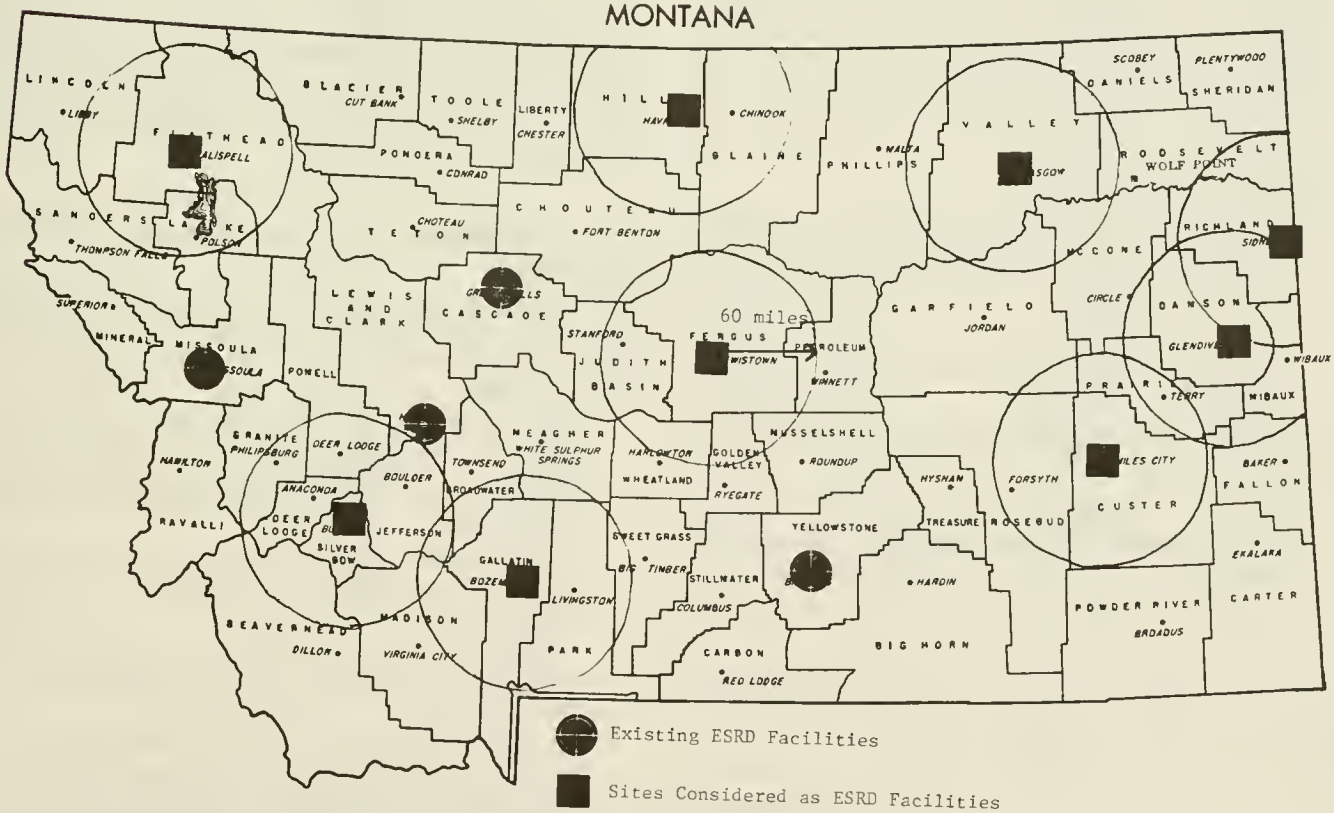


Figure 2 - Communities Considered To Deliver Chronic Dialysis Services in 1985

orado, or the University of Minnesota.

At present, there are four acute general hospitals in Montana which provide ESRD care. They are shown in Figure 1. Hemodialysis units are located in St. Patrick Hospital (Missoula), St. Peter's Hospital (Helena), Columbus Hospital (Great Falls), and Billings Deaconess Hospital (Billings). All four provide acute and chronic hemodialyses. Table 1 shows patient census and utilization statistics for each of the hospitals providing ESRD services.

Training programs for potential home dialysis patients are presently offered in two of the four facilities - St. Peter's Hospital in Helena and Billings Deaconess. Columbus Hospital in Great Falls is developing a training program. Many potential home dialysis patients in the western half of the state receive training from Sacred Heart Medical Center in Spokane.

The concept of kidney patient self-help groups has been recently started in Montana. The first group, the Five Valleys Chapter of the Montana Kidney Patients Association, is organized to educate the public on the needs of a kidney patient, provide an organization of mutual assistance among kidney patients and work with elected representatives at the local, state and federal levels to influence legislation beneficial to kidney patients. Presently, the group has 63 members, including patients, family members and interested providers.

3.0 Future Resource Requirements

This plan supports increased emphasis on home dialysis, but at the same time it is realized that units must continue to be located in facilities around the State. The purpose of this section is to estimate the 1985 need for facility based dialysis units and home dialysis training programs in Montana. These estimates are based upon the following assumptions:

1) Each year, 60 patients out of every one million persons nationally will become victims of end stage renal disease. (In 1978, the incidence rate for Montana was 57.9 per million.)
2) Ten percent of all ESRD patients in the population will die each year.
3) Of the living ESRD patients:
   - 15 percent will have successful kidney transplants. (Twenty-five percent will have transplants but 40 percent will reject their new kidney and require chronic dialysis.)
   - 42.5 percent will be trained and on home dialysis.
   - 42.5 percent will be routinely dialyzed in ESRD centers (i.e., facility).
4) Each ESRD patient will undergo dialysis approximately 156 times per year, based on three dialyses per week for 52 weeks.
5) A fully utilized dialysis station should perform approximately 499 dialyses per year, assuming an average of two treatment runs per day, six days per week, and adjusted for an optimal utilization of 80 percent.
6) The smallest ESRD unit should have at least two dialysis stations.

The first five of these assumptions have been adopted by the ESRD Network Coordinating Council #2 for use in evaluating certificate of need applications.

The first three assumptions are based on national statistics. In the first six months of 1977, Montana had an annualized ESRD rate of 57.9. Between 1975 and 1978, the incidence rate was estimated to be 33 per million. During the same period, seven Montana patients died out of 87 patients (June 1978) for a mortality rate of eight percent. With respect to treatment, 26 percent of the Montana patients, in June 1978, have had transplants, 36 percent are on home dialysis, and 38 percent are on facility dialysis.

The fourth and fifth assumptions are estimates of how much an individual patient will use a facility and what utilization levels are expected of facilities for an efficient operation.

The final assumption deals with the smallest possible size a unit should be to deliver this service. One station (i.e., dialysis unit) facilities are considered unsafe in that it appears a backup capacity should always be available. Even where two station facilities exist, they must be justified on the basis of geographic factors or that they serve a special population (e.g., children's hospitals) before they can be approved. Only facilities with three or more stations can obtain an "unconditional" approval by the ESRD Network Coordinating Council in Seattle.

The approach used in this plan is to consider a number of possible communities which might provide ESRD services and then examine whether or not they can justify providing the services using the above assumptions. Figure 2 identifies these communities; Table 2 presents the current local ESRD population, the estimated ESRD population in 1985, the number of in-center dialyses expected to be performed annually, and the number of stations which can be justified.

On the basis of this approach, it appears that Kalispell can clearly justify a two-station unit in 1985. If adjacent communities (outside the county) were included, Butte and Bozeman might also qualify for the ESRD program. No communities in Eastern Montana can independently justify a dialysis unit. On the other hand, there are currently seven ESRD patients (presumably on home dialysis) in the northeastern corner of the state and five more in the southeastern corner (See Figure 1).

With respect to training facilities for home dialysis patients, it appears that each subarea can justify a home training program. Generally, a program should train at least six patients a year. With the exception of Missoula, all of the existing ESRD programs have a training capability. Most Missoula patients are trained in Spokane, Washington, and that arrangement appears satisfactory. Therefore, it is not recommended at this time that any new facilities in Montana develop home training programs.

4.0 Justification for Exceptions to the National Guidelines

The national guidelines state that HSPs should be consistent with DHEW regulations specifying conditions for coverage of ESRD services. For Montana the following standard is applied:

> "ESRD minimal utilization rates for dialysis facilities performing greater than 20% of the dialyses on outpatients in a Standard Metropolitan Statistical Area (SMSA) of less than 500,000 or in an area not included in an SMSA are:
>
> **Unconditional Approval:** Three or more dialysis stations with a performance of an average of 4.0 or more dialyses per station per week.
>
> **Conditional Approval:** Two dialysis stations with performance of an average of 4.0 or more dialyses per station per week."

The 1978 utilization at Great Falls, Helena and Billings ESRD facilities satisfies these minimal criteria for unconditional approval. The utilization of the ESRD service in Missoula is less than that required for "conditional approval." This, however, is justified because of their emphasis on home dialysis. Fifteen of the sixteen pa-

tients in the Missoula area in 1977 being dialysed for ESRD were on home dialysis. It would be inappropriate for a facility to develop its utilization at the expense of its home dialysis program. At the same time, the number of dialysis patients in the Missoula area (16) require that an ESRD capability be available in the community.

REFERENCES

1) HEW/SSA, "International Period Qualification and Exception Criteria to be Applied to Services of Facilities Providing Treatment to ESRD", **Federal Register,** Volume 40, No. 78, April, 1975, p. 17749.
2) **Plan for End Stage Renal Disease Services,** Metropolitan Health Planning Corporation, Cleveland, Ohio, 1976.
3) **Ibid.**
4) Stange, P. V. and A. T. Sumner, "Predicting Treatment Costs and Life Expectancy for End Stage Renal Disease", **New England Journal of Medicine**, Vol. 298, No. 7, February 16, 1978.
5) D. S. Greenberg, "Washington Report - Renal Politics", **New England Journal of Medicine**, Vol. 298, No. 25, June 22, 1978.
6) Personal Communication, John Coats, Missoula.
7) Stange and Sumner, Op. Cit.
8) HEW/SSA, "Renal Disease", **Federal Register.** Op. Cit.

Subarea & Community	Number ESRD Patients (1979)	Expected New Cases Per Year[1]	Expected Number ESRD Patients Living in Community (1985)[2]	Expected Number Receiving Center Dialysis (1985)	Expected Number Dialyses To Be Performed	Number Stations Which Can Be Justified
Northwestern	17	12	63.1	26.8	4,184	8.4
Missoula	9	5	25.3	10.8	1,685	3.3
Kalispell	4	3	16.7	7.1	1,108	2.2
North Central	14	9	49.8	21.2	3,302	6.6
Great Falls	7	5	27.8	11.8	1,841	3.7
Havre	1	1	5.8	2.5	390	1.0
Southwestern	15	12	60.4	25.7	4,005	8.0
Butte	3	3	13.8	5.9	920	1.8
Helena	9	3	16.7	7.1	1,108	2.2
Bozeman	0	3	11.9	5.1	796	1.6
South Central	18	11	56.8	24.1	3,766	7.5
Billings	13	8	39.3	16.7	2,605	5.2
Lewistown	3	1	5.2	2.2	343	0.7
Eastern	12	7	36.0	15.3	2,387	4.8
Glasgow	0	1	4.3	1.8	281	0.6
Sidney	2	1	4.2	1.8	281	0.6
Glendive	0	1	3.5	1.5	234	0.5
Miles City	1	1	4.4	1.9	296	0.6
STATE TOTAL	76	51	266.1	113.1	17,644	35.3

1) Based on 1985 population estimates
2) Based upon statistics from ESRD Network Coordinating Council #2 (September 19, 1979)

Table 2 - Expected Number of ESRD Stations Needed In Selected Montana Cities in 1985

3.5
SUMMARY
NEONATAL INTENSIVE CARE UNITS

Hospital services for the premature newborn are categorized as levels I, II and III. Level III units are restricted to medical school environments and so are not found in Montana. Level I units provide uncomplicated (low risk) maternity and newborn patient services. Level II units are located in larger urban and suburban hospitals providing an extended range of maternal and neonatal services requiring trained staff and modern equipment. The allocation and size of level II units are the subject of this component.

The approach suggested in this component is to strengthen the regional network already developed in Montana. Currently, there are six hospitals in Montana offering neonatal intensive care services. It is suggested that three of them -Billings, Great Falls and Missoula - be classified as level II regional centers. The other three should continue to provide limited neonatal services to their surrounding communities.

The number of beds needed in 1985 for those hospitals with neonatal services is indicated. Using the model suggested by the MHSA, the state will need approximately 54 neonatal beds in 1985.

The MHSA would encourage physicians at level I facilities to recognize and use the regionalized system of referral and transport and also seek funding for physician directors of level II units.

NEONATAL INTENSIVE CARE UNITS

GOAL:

The three existing level II neonatal intensive care units in Montana should be maintained.

OBJECTIVES:

1) By 1985, develop funding sources for physician directors of Level II units.
2) By 1985, encourage physicians at level I facilities to recognize and use the regionalized system of neonatal referral and transport.
3) By 1985, involve obstetricians in identifying high-risk mothers.

RECOMMENDED REVIEW CRITERIA:

1) Any regionalized system (opposed to a fragmented system) will incur costs for consultation, transportation, special equipment, personnel education, and physician directors. This increase in costs should be compared to savings over the expense of services offered through a fragmented system.
2) Due to the nature of neonatal intensive care, level II personnel and equipment must be available on a 24-hour, seven day a week basis.
3) Level II neonatal intensive care units (NICU) should be developed in hospitals where the number of live births is in the range of 1,500-2,000. Established referral patterns from level I to level II help provide efficient and appropriate transfer of the neonate in need of intensive care services.
4) The physician at the initial level of care primarily responsible for initiating requests for consultation must have the opportunity to participate in the mother's care as she and/or her infant move through the regional system.
5) Lines of communication between hospitals and physicians must be established and maintained so that consultation in both directions is readily available.
6) Education of the physician and nurses in the level I hospital is essential to identify high-risk mothers and possible neonatal problems.
7) Provision must be made to ensure the expeditious return of mothers and/or infants to the most convenient facility qualified to provide the level of care needed.
8) Level II facilities should develop adequate transport arrangements with level I facilities to assure necessary care of the neonate in need of intensive care service. Level II units are differentiated from level I units primarily by the level II unit's ability to provide respiratory care to the neonate.

1.0 Background

Hospital services for the infant can be categorized into three levels of care - levels I, II and III. Level III units are restricted to medical school environments and are not found in Montana. Level I and II units are defined as follows:

Level I

These are hospitals whose function is to provide services primarily for uncomplicated maternity and newborn patients. The number of deliveries in these hospitals is too low to provide an adequate economic base for complex obstetric and newborn care and to provide the caseload needed to attract the necessary staff.

The critical considerations in the care of patients anticipating delivery in these hospitals are the earliest possible detection of the "high-risk" parturient and newborn and the availability of trained personnel and facilities to provide competent emergency obstetric and newborn care.

In metropolitan and suburban areas, such units should be encouraged to consolidate into larger services in one or two hospitals. Geographic remoteness or difficulties in transportation may demand that some level I units continue in operation, but these must be assisted in developing channels for consultation, referral and transport for mothers or infants with complications.[1]

Level II

Level II units will be located in the larger urban and suburban hospitals where the majority of deliveries occur. The number of these units will increase as smaller local hospital units are consolidated. These level II units will provide a full range of maternal and neonatal services for uncomplicated patients and for the majority of complicated obstetrical problems and certain neonatal illnesses. They will have a highly trained multidisciplinary staff and modern, well maintained equipment.

While level II hospitals will vary considerably in their capabilities, the volume of serious obstetrical complications and the number of very sick newborns in most of these hospitals may not be sufficient to justify the establishment of a comprehensive intensive care perinatal unit.

Thus, a few patients with severe obstetric complications and some seriously sick newborns may, after consultation, be transferred to a level III unit.[2]

This component will concentrate on the level II units and other facilities offering neonatal intensive care services in Montana. These units are specially designed to provide specialized services to the sick, prematurely born, and term-infants during the neonatal period (first 28 days after birth).

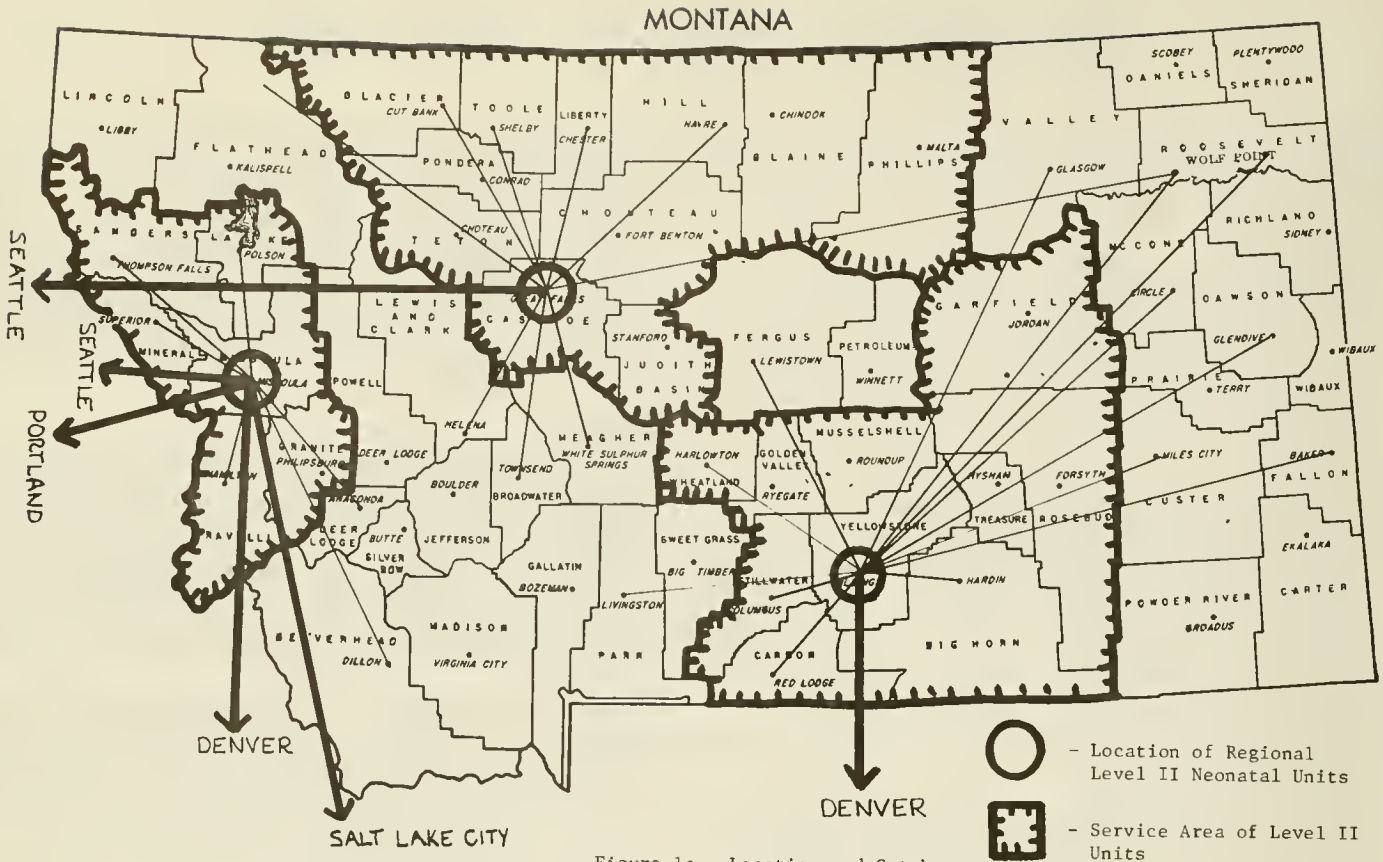
Typically, those conditions and illnesses treated in neonatal units are:

1) prematurity;
2) respiratory disease, birth asphyxia, and hyaline membrane disease;
3) congenital heart disease;
4) other congenital anomalies;
5) infectious disease including sepsis, meningitis, and pneumonia;
6) metabolic diseases.

These six conditions and illnesses account for approximately 80 percent of all infant (under one year) deaths.

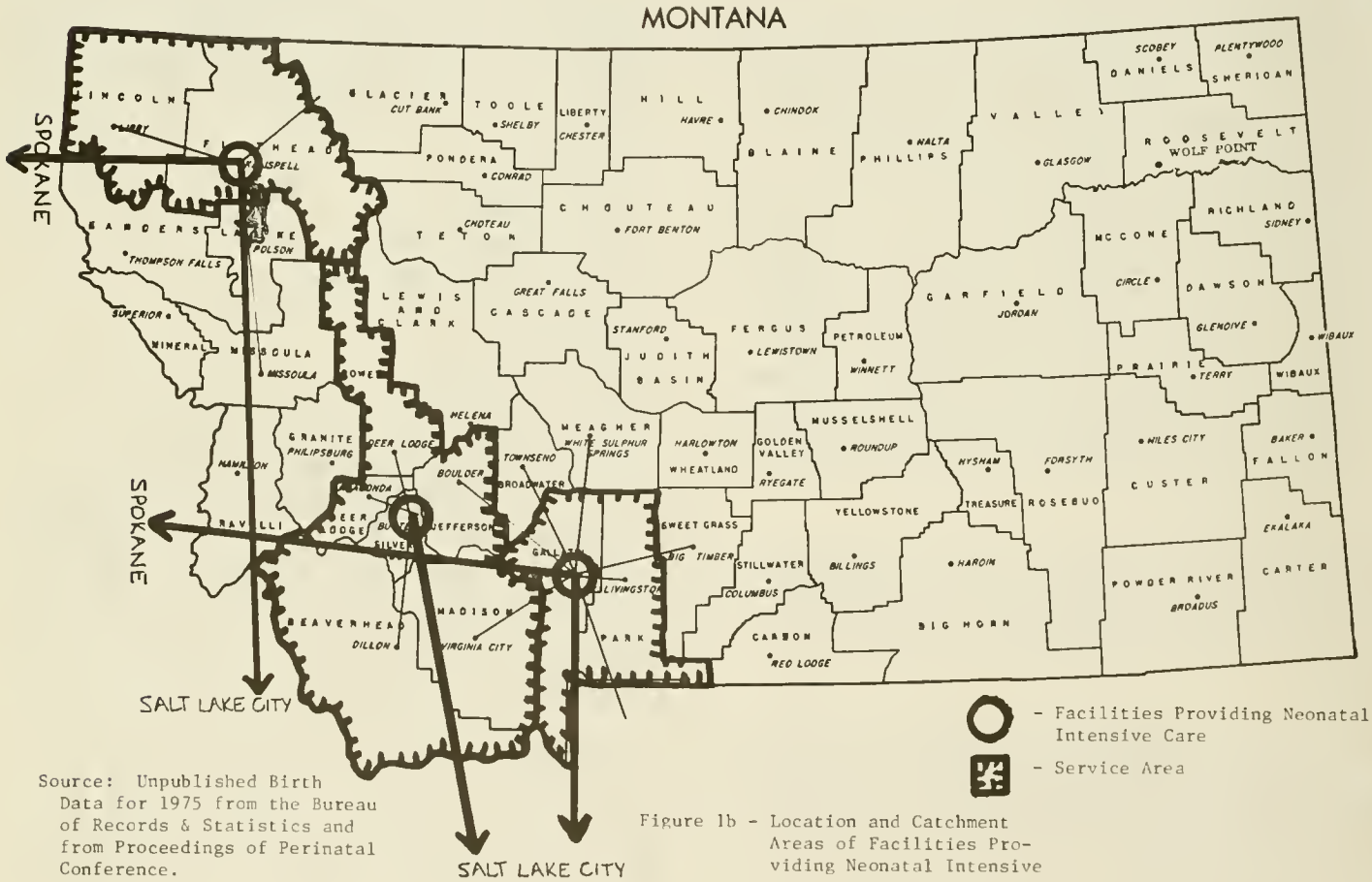
After correcting for variables such as social class, maternal age, parity, and race[3], gestation age and birth weight are the best indicators of whether or not a baby will survive past the neonatal stage. Infants who weigh less than 2,500 grams (5½ pounds) have a death rate of about 22 times greater than those babies who weigh more than 2,500 grams. These lower weight babies account for two-thirds of all neonatal deaths[4]. Prior to the establishment of level II units, those low weight infants that did survive the neonatal development period were subject to a high probability of neurological damage.

The care rendered by level II units is expensive. There are no local estimates for the costs of delivering this care in Montana. A recent study of Cedars of Lebanon Medical Center (Los Angeles), a level III center, indicated the average cost for a surviving infant under 1,200 grams is $40,287. If the statistic were adjusted for non-survivors, the cost per survivor (under 1,200 grams) is $61,641[5]. Dr. John Whittinghill, M.D. of Billings, estimates the average cost for infants over



Source: Unpublished Birth Data for 1975 from the Bureau of Records & Statistics and from proceedings of Perinatal Conference.

Figure 1a - Location and Catchment Areas of Facilities Providing Neonatal Intensive Care in Montana.



Source: Unpublished Birth Data for 1975 from the Bureau of Records & Statistics and from Proceedings of Perinatal Conference.

Figure 1b - Location and Catchment Areas of Facilities Providing Neonatal Intensive Care in Montana.

	LEVEL II UNITS			OTHERS		
	St. Vincent (Billings)	Montana Deaconess (Great Falls)	Missoula Community (Missoula)	St. James Community (Butte)	Kalispell Regional (Kalispell)	Bozeman Deaconess (Bozeman)
Births 1975	-	1,290	1,082	549	555	547
1976	-	1,302	1,326	577	653	533
1977	1,883	1,229	1,301	580	431	652
1978	2,111	1,217	1,300	510	707	667
Neonatal Unit Statistics (1978)						
Number Beds	10	10	6	4	3	2
Patient Admissions	314	142	83	40	63	-
Patient Days	2,705	622	1,252	311	215	-
Average Length of Stay (Days)	8.6	4.4	15.1	7.8	4.0	-
Percent Occupancy	74%	17.0%	57.2%	21.3%	19.6%	-

TABLE 1 - Number of Hospital Births (1975-1978) And 1978 Utilization Statistics for Neonatal Intensive Care Units in Montana

Source: Unpublished Data from Hospital Annual Reports

1,200 grams is between $20,000 and $25,000 nationally.

Special facilities, equipment and staff are required to treat the seriously ill infant. To provide adequate staffing (24 hours a day), maintain staff proficiency and justify the use of the expensive, specialized equipment involved, a fairly large case load is needed.

Regionalization and specialization describe the two major trends in providing intensive care to the neonate as evidenced by these indicators:

- the consolidation of obstetric services among hospitals in order to provide a base of at least 1,500 to 2,000 deliveries, and thus consolidation of a high number of anticipated neonatal problems,
- the development of regional centers for high risk delivery services with intrapartum ICUs,
- the consolidation of neonatal intensive care cases in regional centers, for optimal care of the neonate and cost-effectiveness for the hospital supplying the service,
- the involvement of both the father and the mother in prenatal education, the birth process, and infant contact during the first days of life,
- use of neonatologists (board certified pediatricians with specialized training in neonatology) in level III units in the care of high risk infants,
- complex diagnostic and treatment procedures, with intensive physiological maternal and fetal monitoring.

2.0 Description of the Current Situation

Currently, there are six hospitals in Montana offering neonatal intensive care services. The cities in which these are located and their respective catchment areas are shown in Figure 1a and 1b. As shown in the figure, the service areas are not clear-cut, with several outlying counties claimed by more than one neonatal service.

Table 1 shows the number of births occurring in each of these hospitals between 1975 and 1978 and presents selected utilization statistics for 1978 for each of the NICU units.

Based on these statistics, Billings, Great Falls and Missoula are considered level II units. Butte, Kalispell and Bozeman do not appear to have the case load and staffing to be large regional centers. They do, however, provide some level II services to their surrounding areas.

All six of the hospitals have 24-hour lab service, 24-hour X-ray service, cardiac, respiratory and blood pressure monitors. All except Bozeman Deaconess have respirators. Great Falls and Missoula have capability to provide hyperalimentation (the administration of a greater than optimal amount of nutrients).

With respect to obstetrical services, only Billings and Butte use a standard method for identifying high-risk pregnancies. All six hospitals have sonography (ultrasound), fetal monitors, and amniocentesis and L/S ratio capability (tests to obtain amniotic fluid and to see if the baby's lungs are mature). Billings and Great Falls indicate they also have the capability to do a Caesarian section within 30 minutes or less if needed.

All units, except Bozeman, provide neonatal transport service to their facility. In 1977, Billings transported 60 patients; Great Falls 41; and Missoula 25. Data is not available from the other centers. All of the units depend upon their level III referral source for transport out if needed.

3.0 Future Resource Requirements

The intent of this plan is to strengthen the regionalization of neonatal services currently underway in Montana.

	Billings	Great Falls	Missoula	Butte	Kalispell	Bozeman	State
Estimated 1985 Population of the service area	164,395	165,268	135,903	91,774	72,991	58,648	859,728
Estimated number of births in 1985	2,680	2,693	2,215	1,495	1,190	956	14,014
Estimated number of premature (less than 5 lbs. 8 oz.) infants born	188	189	155	105	83	67	981
Estimated number of patient days in neonatal	2,814	2,828	2,326	1,570	1,250	1,003	14,714
Estimated number of neonatal beds needed	11	11	9	5	4	54	

Table 2
Estimated Number of Neonatal Intensive Care Beds Needed in Montana in 1985.

Table 2 indicates the estimated number of beds needed in 1985 in the units currently serving the state. These estimates were based on the following assumptions:

1) The catchment areas indicated by the 1975 data, (number of births by residence vs. number of births by occurence) reflect the pattern to be observed in 1985.
2) The increase in the number of births will be the same as projected population growth. The average birth rate in Montana over the past 5 years has been 16.5 births per 1,000 population.
3) The number of babies who will be cared for in units within Montana can be estimated by the percentage of premature babies (those under five pounds, eight ounces) born in Montana. The five year (1972-1976) average of babies who were born prematurely in Montana is 7.0 percent.
4) Each intensive care newborn occupies a bassinet an average of 15 days.[6]
5) The annual average occupancy rate of a unit should be 75 percent.[7]

The state need shown in the table is 54 beds. If the criterion in the national guidelines was used (4.0 beds/1,000 births), Montana would need 56 beds. Both of these figures are greater than the sum of the individual units because not all counties are contained in the catchment areas of the individual units.

Based on these estimates, it appears Montanans should support the designation of the Billings, Great Falls and Missoula units as level II units. The other three services, in Butte, Bozeman and Kalispell, cannot be considered level II units because of insufficient case loads.

4.0 Justification for Exceptions to the National Guidelines

The National Guidelines have identified and established the following three criteria for Neonatal Intensive Care Units:

1) Neonatal services should be planned on a regional basis with linkages to Obstetrical Services.
2) The total number of neonatal intensive care beds should not exceed four per 1,000 live births per year in a defined service area.
3) A single neonatal intensive care unit (Level II or III) should contain a minimum of 15 beds.

The first two criteria have been met in this plan component. In this component, neonatal services are being planned on a regional basis. Although a different methodology was used, the total number of beds needed in 1985 as estimated in this plan is approximately equal to four per 1,000 live births. Table 3 compares the number of NICU beds in each catchment area vs. the number based on four beds per 1,000 live births. Indeed, it appears that the percentage of low weight babies born in Montana is not significantly different than the national average. In 1976 and 1977, 6.7 and 6.3 percent, respectively, of the babies born in Montana weighed under 5 pounds 8 ounces. The corresponding national averages were 7.3 and 7.1 percent.

The criterion for which an exception must be made for Montana is the requirement that each unit must have at least 15 beds. This exception is justified in terms of the geographical area being served.

Assuming that each NICU unit should maintain a 75 percent occupancy rate, this criterion would then require each unit to have at least 2,812 births each year. It is predicted that no facility in Montana will have this many births in its service area in 1985.

The distances between communities having Level II units is shown in Table 4. These units are approximately 200 miles apart and their respective service areas cover between 12 and 30 thousand square miles.

The other units offering some neonatal services are considerably smaller and are somewhat closer to the Level II units. Butte and Kalispell are approximately 100 miles from Missoula while Bozeman is 150 miles from Billings. When referral is necessary, they refer out of state to Level III centers. Air transport is required and if available will take approximately four to six hours after being called to get the infant to the unit.

NICU Unit	Estimated Number Of Births In Catchment Area (1985)	4.0 NICU Beds/1,000 Live Births	Number NICU Beds Suggested In HSP
Billings	2,680	10.72	11
Great Falls	2,693	10.77	11
Missoula	2,215	8.86	9
Butte	1,495	5.98	6
Kalispell	1,190	4.76	5
Bozeman	956	3.82	4
State	14,014	56.06	54

Table 3 - Comparison Between National Guidelines NICU Criterion (4.0 beds/1,000 live births) And the Number of Beds Suggested in the HSP

	Distance to Other Level II Centers (miles)			Distance to Level II Centers[1] (miles)			Primary Level III Referral Center	Size of Service Area (sq. miles)
	Billings	Great Falls	Missoula	Butte	Kalispell	Bozeman		
Billings	-	219	339	225	447	143	Denver	24,549
Great Falls	219	-	168	153	228	184	Seattle	31,180
Missoula	339	219	-	119	115	201	Salt Lake City	12,252

1) Butte primarily refers to Salt Lake City; Kalispell to Spokane; and Bozeman to Salt Lake City

Table 4 - Distance Between Units in Montana Offering Neonatal Intensive Care Services

REFERENCES

1) Committee on Perinatal Health, **Toward Improving the Outcome of Pregnancy,** The National Foundation -March of Dimes, White Plains, New York, 1976.

2) Ibid.

3) A. T. Fort, "Adequate Prenatal Nutrition", **Obstetrics and Gynecology,** 37, February, 1971, pp. 288-298.

4) S. Shapio, E. R. Schleniger, and B. E. L. Nesbitt, **Infant Perinatal, Maternal and Childhood Mortality in the United States,** Cambridge, Harvard University Press, 1968.

5) Palmquist, et al, **Pediatrics** Volume 61, No. 6, June, 1978.

6) Paul R. Swyer, M.R.C.P., "Regional Organization of Special Care for the Neonate", **Pediatric Clinic of North America,** Volume 17, Number 4, November, 1970, pp. 761-776.

7) Ibid.

CHAPTER 4
SECONDARY HEALTH SERVICES

Secondary care can be viewed as a middle ground both in terms of medical treatment and in frequency of patient utilization. Secondary care services require a greater population base than primary care services to justify their development, since they are utilized less frequently by the general population and usually require substantial capital investment. Even though the services are fewer in number, they will always be found within the health service area.

Individuals requiring this level of care generally have health problems serious or complex enough to require a visit to a specialist and/or a health facility, (for example, a general hospital, nursing home, or community health center).

In this chapter, the following secondary health services are discussed:

- General Hospital Acute Inpatient Services,
- Acute Care Psychiatric Units,
- Clinical Laboratory Services,
- Diagnostic Imaging,
- Long Term Care Facilities,
- Home Health Care,
- Alcohol & Drug Abuse Services,
- Mental Health Services,
- Comprehensive Rehabilitation Programs

Categories of Service	General Hospital Acute Inpatient Services	Acute Care Psychiatric Units	Diagnostic Imaging	Clinical Laboratory Services	Long Term Care Facilities	Home Health Care	Alcohol Services	Drug Services	Mental Health Services	Comprehensive Rehabilitation Programs
Community Health Promotion							X	X	X	
Prevention & Detection							X	X	X	
Diagnosis & Treatment	X	X	X	X	X	X	X	X	X	X
Habilitation & Rehabilitation					X	X	X	X	X	X
Maintenance Services					X	X	X	X	X	
Support Services										
Enabling Services										
Settings										
Community							X	X	X	
Home						X				X
Mobile			X	X			X	X	X	
Ambulatory										X
Short-Stay	X	X	X	X			X	X		
Long Stay					X		X	X	X	X
Free Standing Support										X
Addressed by the National Guidelines	Yes	Yes								

1) The National Guidelines define hospital beds to include Psychiatric Beds.

Table 1 - General Categories and Settings of Services

Table 1 shows the general categories in which these services can be classified, the settings in which they are typically found and whether or not they are addressed in the National Guidelines.

All of these components can be classified as having a diagnosis and treatment component. That is, they are provided with the intention of identifying and/or alleviating specific diseases and conditions. Long Term Care, Home Health Care and Comprehensive Rehabilitation Programs also devote much effort to Habilitation, Rehabilitation and Maintenance services. Since Alcohol, Drug and Mental Health Services are organized on a programmatic basis, they cover a broad spectrum of categories. Although most of their resources are spent on diagnosis and treatment, habilitation and rehabilitation and maintenance services, these programs also have a responsibility for carrying out community health promotion, prevention and detection efforts.

With respect to setting, the first two components deal with general (short stay) hospitals. Diagnostic Imaging and Clinical Laboratory Services are commonly found in both the hospital and the ambulatory settings. Of course, Long Term Care is only found in the long stay setting and Home Health Services in the home setting. The Alcohol, Drug and Mental Health services have components in the community, ambulatory, short stay and long stay settings. The primary short stay setting for Mental Health Services is the Acute Psychiatric Unit, which is addressed as a separate component. Similarly, the Comprehensive Rehabilitation Programs Component may be operated from either an inpatient or an outpatient setting. It should have an inpatient, outpatient, and home care component.

At the present time, National Guidelines only address acute hospital services. Most of the services addressed in this Chapter may be subject to MHSA review. The hospital based services, Long Term Care Facilities, Home Health Agencies and Comprehensive Rehabilitation programs may be subject to review under either the Certificate of Need Law or Section 1122 of the Social Security Act. Each of the programmatic services, because they receive federal funds are subject to PUFF (Proposed Use of Federal Funds) review and approval/disapproval. These reviews will be the primary mechanism to achieve the goals and objectives stated in this HSP.

4.1
SUMMARY
GENERAL HOSPITAL ACUTE INPATIENT CARE

This component estimates the size of each hospital in the state. These estimates will be used as a baseline in reviewing future certificate of need applications for replacement, renovation and conversion of existing facilities.

Four types of hospital units and beds are considered in this component. These include: General/medical/surgical beds, critical care (ICU/CCU) beds, maternity beds and pediatric beds. Acute psychiatric beds and units specifically dedicated to the treatment of the alcoholic are not addressed.

The primary mechanism for reducing the hospital bed supply in Montana is the review process when hospitals wish to expand, renovate or modernize their facilities. In the past, hospitals have voluntarily taken unneeded beds out of service in planning facility changes, and will continue to do so in the future. (It appears that most of the unneeded beds in Montana are found in multiple hospital counties and communities.) It is suggested that in these cities, maternity and pediatric units can be consolidated in a single hospital and considerable savings achieved. In addition, hospitals throughout Montana should be encouraged to share services. Rural hospitals should study the feasibility of developing combination hospital/long-term care facilities and community health centers.

Justification is provided for exceptions to the national guidelines. Although the state, with its expected population growth, will probably have fewer beds in 1985 than the national goal of 4.0 beds/1,000 population, it cannot meet the other goal of an 80 percent average occupancy rate. It is expected that the 1985 bed to population ratio will be about 3.8 per 1,000 population, and if the plan were fully implemented, 3.2 per 1,000 population. At the same time, the state's hospitals are expected to have an average occupancy rate of between 59 and 69 percent.

GENERAL HOSPITAL ACUTE INPATIENT SERVICES (Medical/Surgical, Critical Care, Pediatric and Obstetrical Beds)

Goal:

Acute inpatient hospital services should continue to be developed on the assumption that a hospital bed will be available for a patient 99.9 percent of the time in each institution.

Objectives:

1) By 1985, hospitals in Billings, Helena and Kalispell should consider expanding their physical plants.

2) Through 1985, the primary method of reducing excess hospital beds in Montana should continue to be through the review process with emphasis on the voluntary reduction of excess hospital beds. The construction or modernization of unnecessary hospital beds should be disapproved. Hospitals having excessive beds (beyond the number needed in reserve) and wishing to remodel or renovate their facilities should reduce the number of beds being maintained.

3) Through 1985, it is expected that every hospital in Montana should provide critical care (ICU/CCU) services even though the maintenance of these services may not be cost effective.

4) Rural hospitals should consider combination hospital/long-term care facilities/community health centers. The possibility of using swing beds should be investigated with congressional leaders, state legislators, regulatory and licensing agencies, and third-party reimbursement organizations.

5) Hospitals throughout Montana should be encouraged to develop and implement methods of sharing services and forming satellite systems wherever economically effective.

6) By 1980, a program of continuing education for the hospital staff members providing ICU/CCU services should be ongoing. Backup staff members must also be trained so that gaps in service are prevented.

Recommended Review Criteria:

1) The construction, addition or modernization of acute care hospital beds should be financially feasible. In concert with this general guideline, the following criteria are recommended:

   - No new general hospitals should be approved unless the area in which the proposed hospital will be located is not and cannot be served by existing hospitals.

   - Proposed expansion and major modernization plans subject to 1122 or Certificate of Need reviews must be compatible with the estimated bed need of the service area. The bed need figures are to be used as guidelines and not standards. When reviewing a proposed application, the committee should consider local factors which the estimates do not take into account.

   - In deciding between modernization or replacement the most cost effective solution should be favored.

   - Small hospitals (less than 50 beds) should emphasize a "swing bed" concept rather than establishing separate Medical/Surgical, Obstetrical and Pediatric Units. Where and when possible, the swing bed concept should also be extended to long-term care beds. Until legislation is passed permitting the use of swing long-term beds, small hospitals should consider developing combination facilities (hospitals - long-term facilities - community health centers). In addition, physician clinics should be located in close proximity to the small hospital so that essential support services such as laboratory and X-ray need not be duplicated.

   Two organizational and operational concepts which might reduce hospital costs should be explored and encouraged — satellite systems and shared services. The satellite system refers to an arrangement in which a large urban hospital offers a broad range of medical services while several outlying hospitals provide more routine care. Each member hospital has access to all the professional services available to the system as a whole.

   Collaborative arrangements and shared services are not as rigid as the satellite system and may also lead to increased efficiency and improved patient care. Examples of services which might be shared by two or more hospitals are:

   - Central purchasing
   - Administration
   - Automation and computers
   - Dietary
   - Engineering
   - Laundry
   - Library
   - In-service education

   Although these strategies may not be practical and economical in Montana because of the distances involved, the possibility of establishing such programs should be explored.

2) Once defined by a comprehensive patient origin study, the overall acute inpatient and outpatient service capacity of the hospital system should be equitably distributed and kept in balance with the demonstrated needs of each planning regions' catchment area.

3) Hospital services should be distributed to support and promote health care.

4) General hospitals and their medical staffs should work with other health professionals toward the development of primary care, home health and other out-of-hospital community services to improve access to care.

5) Hospitals should closely link to other types of levels of

care through organized referral and patient transfer arrangements to assist in the provision of a comprehensive range of health services to the community. The development of regional satellite systems linking hospitals, nursing homes, home health agencies, rehabilitation facilities and outpatient facilities throughout Montana will encourage continuity of care.

6) Hospitals in Montana should offer the highest quality and most comprehensive and effective service possible at the most reasonable cost to the patient, in accordance with the attending physician's plan for care of the patient.

7) Effective and consistent quality assurance and peer review programs should be maintained and stressed in every hospital to ensure proper referral of the patient to a more specialized, or in some cases, a lesser level of care. Under the swing bed concept, hospital beds are not allocated to distinct departments. Instead, they are used by different types of patients as needed.

8) For reviews involving critical care (ICU/CCU) beds, the following criteria are applicable:

- Intensive care units/coronary care units should be readily accessible to the emergency room in hospitals with fifty or more licensed beds.
- Intensive care beds/coronary care beds in hospitals of less than fifty licensed beds should be located in close proximity to the nurse's station.
- Arrangements should be made for direct transmission of electrocardiograms (ECGs) to consultants in other facilities if no local cardiologists are available for the care of coronary care patients.
- At a minimum, one registered professional nurse for every three critical care patients should be provided. Patient needs may dictate that one registered professional nurse is needed for every critical care patient. Specially oriented licensed practical nurses, working under close professional nursing supervision to perform assigned bedside duties, may be used to reduce this ratio.
- All nurses staffing critical care units should at least annually take appropriate continuing education and refresher courses in order to maintain their proficiency.
- A medical director or a committee of the medical staff assigned to a critical care unit should assume the responsibility for medical supervision, educational programming and patient treatment for emergent situations.

1.0 Background

As one of their major functions, general hospitals provide 24-hour inpatient services for the diagnosis, short-term care, and treatment of patients. Inpatient services range from very generalized medical-surgical procedures to highly specialized and sophisticated services in specially designed units. The range of services delivered by any one hospital depends upon the population and the geographic area being served as well as such factors as transportation access, physician accessibility and specialization, availability of required personnel, utilization of service, and economic feasibility.

The intent of this component is to establish goals and objectives for the future development of inpatient services in Montana. As part of this activity, the local need for short-term (patient stays of generally less than 30 days) hospital beds is estimated. These include medical/surgical, critical (intensive and coronary) care, obstetrical (maternity), and pediatric beds. Acute psychiatric beds will be addressed as a separate component of the plan. The bed need estimates are intended to serve as general guidelines for evaluating future hospital construction applications. It is assumed that the individual applications will contain greater justification and more recent and detailed data to support the number of beds being requested.

The rationale for developing a consistent and coordinated plan for future hospital services is exemplified by the Montana statistics displayed in Table 1. Basically, hospital costs are increasing at a tremendous rate while utilization is decreasing. Table 1 shows selected statistics for general community hospitals in Montana for the period between 1975 and 1978. A review of this table shows that during these four years:

- Patient admissions have increased 8 percent (The Montana population is estimated to have increased 4.9 percent.)
- Patient days have decreased 5 percent. The average length of stay has also decreased.
- Total operating costs for community hospitals in Montana increased from $84 million to $143 million — up 70 percent. The American Hospital Association attributes the rise in hospital costs to a number of factors, including an increase in the number of employees, increased salary levels, increases in such items as insurance, fuel and housekeeping supplies, new technological equipment and service purchases, more reliance on debt financing, and the increased cost associated with complying with government regulations.
- The cost per day and per stay also increased by 60 and 55 percent, respectively.
- More than 100 licensed hospital beds have been taken out of service. The average reduction has been about 1 percent per year. Most hospitals have opted for fewer beds as they consider rebuilding or renovating.
- The annual occupancy rate has remained relatively stable. Over the last four years it varied from 55 to 57 percent.
- The number of beds per thousand population has dropped from 4.6 to 4.3 (−7 percent) and the number of patient days per thousand population dropped from 965 to 899 (−7 percent).

2.0 Description of the Current Situation

2.1 Current Inventory and Utilization Levels -Overview

Montana is a rural state with a large land area and small population. Figure 2 shows the location of hospitals in Montana. Geographically, there are eight counties without a general hospital and 28 with a single hospital. All of these are rural. Four urban counties (Cascade, Lewis & Clark, Silver Bow, and Yellowstone) and three rural counties (Chouteau, Flathead and Madison) have two hospitals each.

	Number Patient Admissions	Number Patient Days	Total Operating Costs ($ Million)	Adjusted Costs Per Day[1]
1975	121,424	721,494	$ 83.9	$114
1976	133,435	701,545	102.2	132
1977	130,868	686,232	123.9	159
1978	131,568	688,064	142.9	183

Adjusted Costs Per Adm.[1]	Licensed Beds	Annual Occupancy Rate	Beds/1,000 Population	Patient Days/1,000 Population
$621	3,475	56.9	4.6	965
728	3,443	55.8	4.6	932
830	3,410	55.1	4.5	902
965	3,368	56.0	4.4	899

1) Statistics furnished by the Montana Hospital Association. These have been adjusted by the Hospital Association to exclude outpatient costs and utilization, and modified by the Montana Health Systems Agency.

TABLE 1
UTILIZATION AND COST STATISTICS FOR MONTANA HOSPITALS (1975-1978)

Source: Unpublished data from hospital annual reports

One urban county (Missoula) and two rural (Lake and Roosevelt) each have three hospitals. The urban hospitals are all located in the same city, whereas the rural hospitals are in different communities. In addition, there are two V.A. Hospitals (Helena and Miles City) and three Indian Health Service Hospitals (Browning, Harlem and Crow Agency) which serve special population groups. These federal hospitals are not addressed directly in this component because the HSA does not have any review authority over them and 1978 utilization data is not available.

Most communities in the state are served by small hospitals. Forty-one percent (25 of the 61) of the community hospitals are currently licensed for 25 or less beds; seventy percent have 50 or less beds. All but eleven of the largest hospitals in Montana are exempt from national guidelines (occupancy) because they have fewer than 4,000 admissions per year.

Tables 2 through 6 show 1978 general utilization statistics for each hospital by county and subarea. Two other series of tables showing 1978 statistics are presented in the Appendices. The first series deals with cost data and the second with general patient origin information.

At the present time, most of the smaller hospitals use a type of "swing bed" system where possible. The larger hospitals in Montana have set up departmental beds. Most of the small rural hospitals do not set aside medical/surgical, maternity and pediatric beds. Instead, they assign them as needed. For those that have allocated beds for specific use (i.e., units), the maternity and pediatric beds usually experience lower average occupancy rates than do the medical and surgical beds.

The swing bed concept has not extended to acute care and long-term care beds. Medicare and Medicaid do not recognize the swing bed concept under reimbursement guidelines. However, in recent years many of the small Montana hospitals have set up combined, but separate, hospital and long-term care facilities. At this time, 28 facilities (46 percent) provide these dual services and each combined facility has the same administrator.

Several experiments involving the sharing of services are being implemented in Montana. For example, group purchasing of selected items is a service currently offered by the Montana Hospital Association. In addition, many hospitals within the same area participate in consortiums to provide inservice education to their respective staffs. The satellite concept, where several small hospitals relate to a larger, regional facility, has not been successfully implemented in Montana. However, more and more of the smaller institutions are turning to professional management firms to operate their facilities. At the present time, there are five such organizations running 16 Montana hospitals. These include:

- Health Central
- Lutheran Hospital and Homes Society
- A. E. Brim & Associates
- Hospital Corporation of America
- Health Systems Research Institute

The above do not include those hospitals which are owned and operated by one of the four Catholic Orders in Montana.

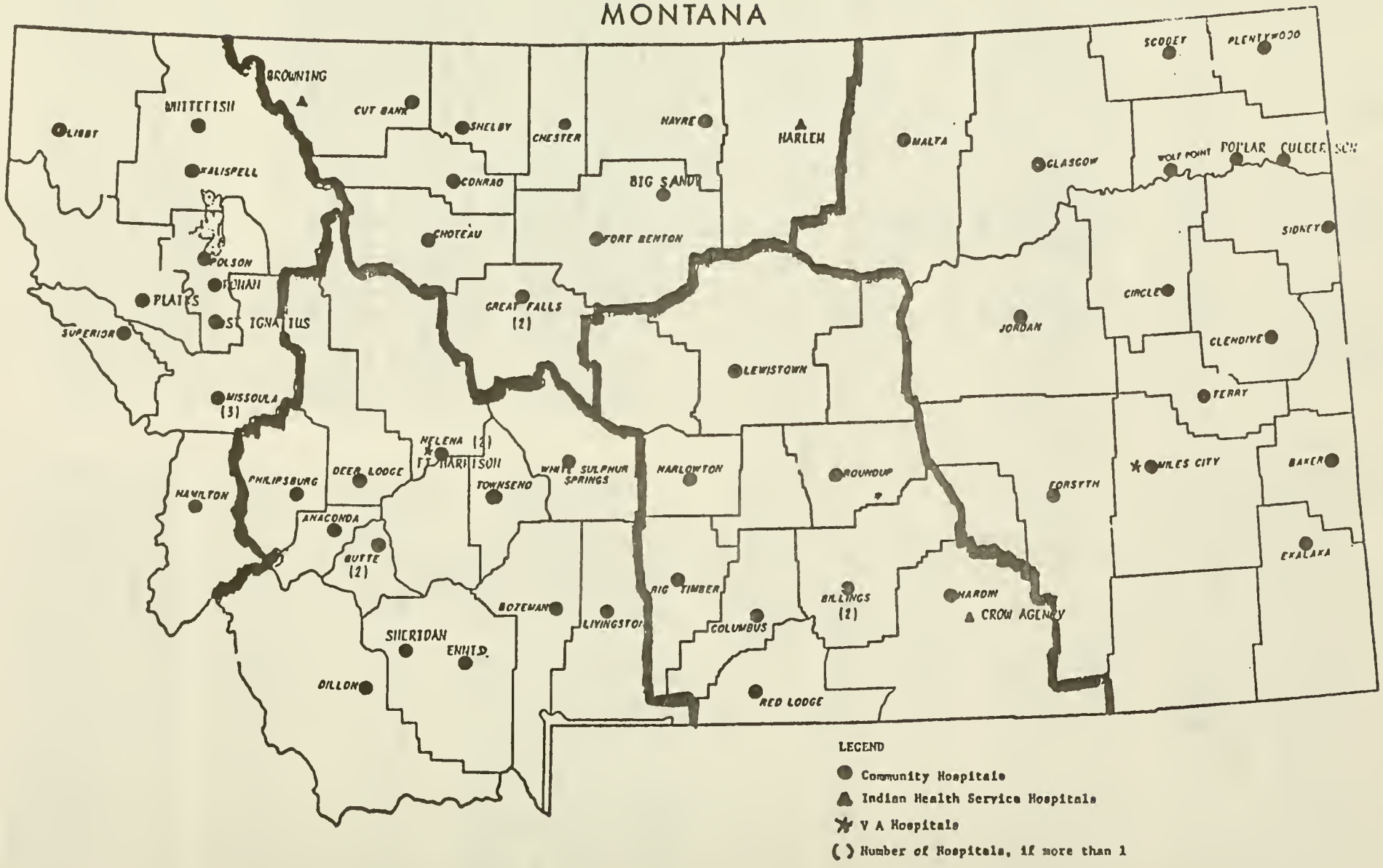


FIGURE 1 - LOCATION OF ACUTE CARE HOSPITALS IN MONTANA

Hospital	City	GENERAL ACUTE & CRITICAL CARE Beds	Number Admissions	Number Patient Days	Average Occupancy Rate	ALOS	CRITICAL CARE Beds	Number Admissions	Number Patient Days	Average Occupancy Rate	ALOS
Kalispell Regional Hospital	Kalispell	91	5,572	25,396	76 5	4 6	8	319	1,454	49 8	4 6
North Valley Hospital	Whitefish	44	1,939	9,076	56 5	4 7	4	168	594	40.7	3.5
St. Joseph Hospital	Polson	40	1,425	6,062	41 5	4 3	2	113	412	56.4	3.6
St. Luke Community Hosp.	Ronan	25	834	4,086	44 8	4.9					
St. Johns Lutheran Hospital	Libby	34	1,303	5,374	43.3	4 1	2	80	174	23.8	2.2
Mineral County Hospital	Superior	10	289	1,071	29 3	3.7	2	47	163	22.3	3.5
Missoula Community Hosp.	Missoula	115	5,735	22,600	53.8	3.9	4	201	791	54 2	3.9
Missoula General Hospital	Missoula	57	1,436	7,485	36 0	5.2	5	63	180	9.9	2.9
St. Patrick Hospital	Missoula	200	6,835	37,762	51.7	5.5	13	653	2,936	61.9	4.5
Mission Valley Hospital	St. Ignatius	30	819	3,186	29 1	3.9	2	17	91	12.5	5.4
Marcus Daly Memorial Hosp.	Hamilton	48	2,262	9,751	55.7	4.3	2	131	243	33.3	1.9
Clark Fork Valley Hospital	Plains	20	1,157	4,925	67.5	4.3	2	111	325	44.5	2.9

1) Average length of stay

TABLE 2 - UTILIZATION STATISTICS (1978) FOR GENERAL ACUTE & CRITICAL CARE IN NORTHWESTERN MONTANA HOSPITALS

Hospital	City	GENERAL ACUTE & CRITICAL CARE Beds	Number Admissions	Number Patient Days	Average Occupancy Rate	ALOS	CRITICAL CARE Beds	Number Admissions	Number Patient Days	Average Occupancy Rate	ALOS
Columbus Hospital	Great Falls	190	8,502	51,711	74.6	6.1	14	527	3,204	62.7	6.1
Montana Deaconess Med Center	Great Falls	254	9,502	52,331	56.4	5.5	17	1,113	7,833	126.2	7.0
Big Sandy Medical Center	Big Sandy	9	269	1,321	40.2	4.9	-	-	-	-	-
Chouteau County District Hosp.	Fort Benton	17	396	1,763	28.4	4 5	-	-	-	-	-
Memorial Hospital	Cut Bank	20	889	4,294	58.8	4 8	-	-	-	-	-
Northern Montana Hospital	Havre	120	4,629	21,924	50.1	4.7	7	353	1,242	48.6	3.5
Liberty County Hospital	Chester	11	384	1,492	37.2	3.9	2	43	169	23.2	3.9
Pondera County Hospital	Conrad	50	1,732	9,320	51.1	5 4	2	87	290	39.7	3.3
Teton Medical Center	Choteau	22	735	3,621	45.1	4 9	-	-	-	-	-
Toole County Hospital	Shelby	24	633	2,395	27.3	3.8	2	26	118	16 2	4.5

1) Average length of stay

TABLE 3 - UTILIZATION STATISTICS (1978) FOR GENERAL ACUTE & CRITICAL CARE IN NORTH CENTRAL MONTANA HOSPITALS

2.2 Current Inventory and Utilization Levels -Critical Care

Critical care is a generic term used to include both intensive care and coronary care units. These units are specifically designated areas of the hospital where seriously ill or injured patients receive highly specialized services. In these units, specially trained nursing and support personnel are concentrated. Sophisticated electronic monitoring equipment provides continuous patient coverage and observation. Thus, if the patient experiences complications, corrective measures and life saving techniques can be quickly initiated.

Tables 2 through 6 also show the 1978 utilization statistics for critical care units in Montana hospitals. Critical care is highlighted because the utilization of these services is increasing (while other services are decreasing) and because it is felt that all hospitals have a responsibility to provide these services to the best of their ability, despite cost effectiveness considerations.

Larger hospitals typically designate critical care beds as distinct and separate units. Floor space, staff and equipment are all allocated specifically for these beds. Generally these units consist of four or more beds. In contrast, smaller hospitals typically use one or two medical/surgical beds located adjacent to the nursing station as the need for ICU/CCU beds arises. These are called "monitored beds." Staff are assigned as the situation dictates and the equipment used to monitor the beds may be portable. In smaller hospitals, critical care units are primarily used as an adjunct to the emergency medical system.

2.3 Current Inventory and Utilization Levels -Obstetrical Care

Most hospitals in Montana provide maternity services.

Hospital	City	GENERAL ACUTE & CRITICAL CARE Beds	Number Admissions	Number Patient Days	Average Occupancy Rate	ALOS[1]	CRITICAL CARE Beds	Number Admissions	Number Patient Days	Average Occupancy Rate	ALOS[1]
Barrett Hospital	Dillon	31	1,043	3,995	35.3	3.8	2	75	130	17.8	1.7
Broadwater Hospital	Townsend	21	405	1,971	25.7	4.9	1	14	22	6.0	1.6
Community Hosp. of Anaconda	Anaconda	60	1,796	8,034	36.7	4.5	2	76	211	28.9	2.8
Bozeman Deaconess Hosp.	Bozeman	104	5,022	20,707	54.5	4.1	4	154	634	43.4	4.1
Granite Co Memorial Hosp.	Philipsburg	10	124	490	13.4	4.0	-	-	-	-	-
St. Peter's Hospital	Helena	111	6,313	33,131	81.8	5.2	7	558	1,471	57.6	2.6
Shodair Crippled Children	Helena	35	1,358	4,624	36.2	3.4	-	-	-	-	-
Madison Valley Hospital	Ennis	11	395	2,192	54.6	5.5	1	16	40	11.0	2.5
Ruby Valley Memorial Hosp.	Sheridan	20	476	2,083	28.5	4.4	2	6	19	2.6	3.2
Mountainview Memorial Hosp.	White Sulphur	6	245	997	45.5	4.1	-	-	-	-	-
Livingston Memorial Hosp.	Livingston	54	1,515	7,092	36.0	4.7	4	96	236	16.2	2.5
Powell Co Memorial Hosp.	Deer Lodge	35	1,075	5,223	40.9	4.9	2	81	247	33.8	3.0
St. James Community Hosp.	Butte	180	7,124	41,488	63.1	5.8	6	479	1,756	80.2	3.7
Silver Bow General Hosp.	Butte	122	3,954	20,335	45.7	5.1	2	124	352	48.2	2.8

1) Average length of stay

TABLE 4 - UTILIZATION STATISTICS (1978) FOR GENERAL ACUTE & CRITICAL CARE IN SOUTHWESTERN MONTANA HOSPITALS

Hospital	City	GENERAL ACUTE & CRITICAL CARE Beds	Number Admissions	Number Patient Days	Average Occupancy Rate	ALOS[1]	CRITICAL CARE Beds	Number Admissions	Number Patient Days	Average Occupancy Rate	ALOS[1]
Big Horn Co Memorial Hosp.	Hardin	16	717	2,776	47.5	3.9	-	-	-	-	-
Carbon Co Memorial Hosp.	Red Lodge	28	907	4,501	44.0	5.0	2	86	270	37.0	3.1
Central Montana Hospital	Lewistown	47	1,992	10,348	60.3	5.2	4	141	721	49.4	5.1
Stillwater Community Hosp.	Columbus	27	691	3,542	35.9	5.1	2	22	113	15.5	5.1
Sweet Grass Community Hosp.	Big Timber	17	287	1,353	21.8	4.7	1	6	13	3.6	2.2
Wheatland Memorial Hospital	Harlowton	23	405	1,619	19.3	4.0	-	-	-	-	
Billings Deaconess Hosp.	Billings	176	7,714	50,919	79.3	6.6	9	780	4,954	150.8	6.4
St. Vincent Hospital	Billings	225	13,235	72,352	88.1	5.5	12	729	3,350	76.5	4.6

1) Average length of stay

TABLE 5 - UTILIZATION STATISTICS (1978) FOR GENERAL ACUTE & CRITICAL CARE IN SOUTH CENTRAL MONTANA HOSPITALS

However, Missoula and Billings hospitals have consolidated these services at one hospital. Geography and distance dictate that this service be readily accessible to the obstetrical patient. In 1978, 39 hospitals in Montana registered less than 100 births. Some of these hospitals do not maintain a separate unit. Instead, they employ the "swing bed" concept using a specific bed as a maternity bed as needed.

Table 7 presents 1977 and 1978 utilization statistics for six of the larger hospitals in Montana. Each of these hospitals has a dedicated obstetrical unit, serves as a referral hospital in its region, has at least one physician specializing in obstetrics and gynecology on staff, and delivers at least 500 babies each year. In this select group of hospitals, there is a variance in the number of births (ranging from 510 to 2,111) and in the annual occupancy rate (38 percent to 91 percent).

2.4 Current Inventory and Utilization Levels -Pediatric Care

Services are consolidated in Helena where all non-emergency pediatric patients are admitted to Shodair Children's Hospital. In Billings, most pediatric patients (except pediatric surgery patients) are hospitalized at St. Vincent Hospital.

In many small hospitals, dedicated pediatric units are not maintained. Instead, beds for pediatric patients are made available as needed. Of the 61 hospitals in Montana, 14 do not separate pediatric statistics from their general utilization statistics and another 13 indicate they have no dedicated beds.

Hospital	City	GENERAL ACUTE & CRITICAL CARE Beds	Number Admissions	Number Patient Days	Average Occupancy Rate	ALOS	CRITICAL CARE Beds	Number Admissions	Number Patient Days	Average Occupancy Rate	ALOS
Dahl Memorial Hospital	Ekalaka	16	253	1,129	19.3	4.5	1	20	75	20.5	3.8
Holy Rosary Hospital	Miles City	119	2,767	15,206	35.0	5.5	7	224	575	22.5	2.6
Daniels Memorial Hospital	Scobey	8	343	1,401	48.0	4.1	-	-	-	-	-
Glendive Community Hospital	Glendive	46	1,682	9,335	55.6	5.5	2	108	379	51.9	3.5
Fallon Memorial Hospital	Baker	19	296	1,364	19.7	4.6	3	15	54	4.9	3.6
Garfield County Hospital	Jordan	8	57	235	8.0	4.1	1	2	7	1.9	3.5
McCone County Hospital	Circle	20	599	2,962	40.6	4.9	-	-	-	-	-
Malta Hospital	Malta	30	868	6,131	56.0	7.1	1	44	204	55.9	4.6
Prairie Community Hospital	Terry	6	173	959	43.8	5.5	1	11	37	10.1	3.4
Community Memorial Hospital	Sidney	55	2,326	12,676	63.1	5.4	4	184	513	35.1	2.8
Roosevelt Memorial Hospital	Culbertson	14	477	2,834	55.5	5.9	-	-	-	-	-
Poplar Community Hospital	Poplar	22	665	3,050	38.0	4.6	-	-	-	-	-
Trinity Hospital	Wolf Point	42	1,371	7,205	47.0	5.3	-	-	-	-	-
Rosebud Community Hospital	Forsyth	18	443	1,647	25.1	3.7	2	11	56	7.7	5.1
Sheridan Memorial Hospital	Plentywood	22	920	5,443	67.8	5.9	1	14	82	22.5	5.9
Frances Mahon Deaconess Hosp.	Glasgow	48	1,989	9,271	52.9	4.7	4	323	759	52.0	2.3

1) Average length of stay

TABLE 6 - UTILIZATION STATISTICS (1978) FOR GENERAL ACUTE & CRITICAL CARE IN EASTERN MONTANA HOSPITALS

Facility	Town	No. Births 1977	No. Births 1978	Size of Ob. Unit	Annual Occupancy Rate 1977	Annual Occupancy Rate 1978
Missoula Community*	Missoula	1,301	1,300	17	52.0%	60.2%
Kalispell Regional	Kalispell	758	707	6	91.3%	78.9%
Montana Deaconess*	Great Falls	1,229	1,217	21	58.9%	57.6%
St. James Community	Butte	580	510	11	55.7%	50.6%
Bozeman Deaconess	Bozeman	652	667	15	38.2%	38.4%
St. Vincent	Billings	1,883	2,111	25	80.2%	80.2%

* Identified as Level II Neonatal Intensive Care Centers in Montana

Table 7 · Utilization Statistics
And Performance Indicators for Hospitals in Montana
Offering Complicated Obstetrical Services

Table 8 shows 1978 pediatric utilization statistics for the 13 Montana hospitals with over 100 beds and which maintain distinct pediatric units. The size of these units varies from 7 beds to 30 beds. (Shodair Crippled Children's Hospital serves only pediatric patients and maintains a total licensed bed complement of 35.) Overall, the annual occupancy rate of these units and the average length of stay are both less than general medical/surgical units. These observations are consistent with national trends.

3.0 Future Resource Requirements

Tables 9 through 13 indicate the estimated number of acute care hospital beds needed in 1985 in each of the service areas (counties) and MHSA subareas. Acute Psychiatric Beds are excluded in making these estimates. In these tables the bed need is estimated for each hospital by the following formula:

$$\text{Bed Need} = \text{ADC} + 3.00 \quad \text{ADC}$$

where ADC = the annual average daily census (the estimated number of patients in the hospital on any given day)

Subarea and Hospital	City	Beds	Number Admissions	Number Patient Days	Average Occupancy Rate	Average Length of Stay
Eastern						
Holy Rosary Hospital	Miles City	11	231	646	16.1	2.8
North Central						
Columbus Hospital	Great Falls	29	1,362	4,213	39.8	3.1
Montana Deaconess Medical Center	Great Falls	20	1,170	3,678	50.4	3.1
Northern Montana Hospital	Havre	12	912	2,633	60.1	2.9
South Central						
Billings Deaconess Hosp.	Billings	10	356	1,283	35.2	3.6
St. Vincent Hospital	Billings	28	1,554	8,099	79.2	5.2
Southwestern						
Bozeman Deaconess Hosp.	Bozeman	7	452	1,217	47.6	2.7
Shodair Crippled Children's	Helena	35	1,362	4,552	35.6	3.3
St. James Community	Butte	23	1,161	3,546	42.2	3.1
Silver Bow General Hosp.	Butte	14	217	1,074	21.0	4.9
Northwestern						
Kalispell Regional Hospital	Kalispell	8	708	1,660	56.8	2.3
Missoula Community Hosp.	Missoula	10	600	2,408	66.0	4.0
St. Patrick Hospital	Missoula	30	1,088	4,953	45.2	4.6

Table 8 - Utilization Statistics (1978) for Pediatric Units in Selected Montana Hospitals (Between 100 & 500 Beds)

County	Hospital	Number Pat. Days (1978)	Adjusted Daily Census (1978)	Estimated Bed Need (1985)	Licensed Beds (1978)	Deficit (+) Surplus (−)
Flathead	Kalispell Regional Hospital	25,396	84.6	112	91	21
	North Valley Hospital	9,076	30.2	47	44	3
Lake	St. Joseph Hospital	6,062	18.8	32	40	- 8
	St. Luke Community Hosp.	4,086	12.6	23	25	- 2
	Mission Valley Hospital	3,186	8.9	18	30	-12
Lincoln	St. John's Lutheran Hospital	5,374	14.6	26	34	- 8
Mineral	Mineral County Hospital	1,071	3.7	10	10	0
Missoula	Missoula Community Hosp.	22,600	72.5	98	115	-17
	Missoula General Hospital	7,485	24.0	39	57	-18
	St. Patrick Hospital	37,762	121.1	154	200	-46
Ravalli	Marcus Daly Memorial	9,751	29.3	45	48	- 3
Sanders	Clark Fork Valley Hospital	4,925	15.4	27	20	7
	Subarea Total	136,774	435.7	631	714	-83

Table 9 - 1985 Bed Need Estimates For General, Acute Care and Critical Care Units In Northwestern Montana Hospitals

County	Hospital	Number Pat. Days (1978)	Adjusted Daily Census (1985)	Estimated Bed Need (1985)	Licensed Beds (1978)	Deficit (+) Surplus (−)
Cascade	Columbus Hospital	51,711	148.2	185	190	- 5
	Montana Deaconess Medical Center	52,331	150.0	187	254	-67
Chouteau	Big Sandy Medical Center	1,321	3.6	9	9	0
	Chouteau County District Hospital	1,763	4.8	11	17	- 6
Glacier	Memorial Hospital	4,294	12.9	24	20	4
Hill & Blaine	Northern Montana Hospital	21,924	64.5	89	120	-31
Liberty	Liberty County Hospital	1,492	4.2	10	11	- 1
Pondera	Pondera County Hospital	9,320	25.7	41	50	- 9
Teton	Teton Medical Center	3,621	12.0	22	22	0
Toole	Toole County Hospital	2,395	6.2	14	24	-10
	Subarea Total	150,172	432.1	592	717	-125

Table 10 - 1985 Bed Need Estimates For General, Acute Care and Critical Care Units In North Central Montana Hospitals

County	Hospital	Number Pat. Days (1978)	Adjusted Daily Census (1985)	Estimated Bed Need (1985)	Licensed Beds (1978)	Deficit (+) Surplus (-)
Beaverhead	Barrett Hospital	3,995	12.1	23	31	- 8
Broadwater	Broadwater Hospital	1,971	6.0	13	21	- 8
Deer Lodge	Community Hospital of Anaconda	8,034	23.8	38	60	-22
Gallatin	Bozeman Deaconess Hosp.	20,707	64.9	89	104	-15
Granite	Granite County Memorial	490	1.4	5	10	- 5
Lewis & Clark & Jefferson	St. Peters Hospital	33,131	108.4	140	111	29
	Shodair Crippled Children's Hospital	4,624	15.1	27	35	- 8
Madison	Madison Valley Hospital	2,192	5.9	13	11	2
	Ruby Valley Mem. Hosp.	2,083	5.6	13	20	- 7
Meagher	Mountainview Mem. Hosp.	997	2.8	8	6	2
Park	Livingston Memorial Hosp.	7,092	22.7	37	54	-17
Powell	Powell County Memorial	5,223	17.4	30	35	- 5
Silver Bow	St. James Community	41,488	125.7	159	180	-21
	Silver Bow General Hosp.	20,335	61.6	85	122	-37
	Subarea Total	152,362	473.4	680	800	-120

Table 11 - 1985 Bed Need Estimates For General, Acute Care and Critical Care Units In Southwestern Montana Hospitals

County	Hospital	Number Pat. Days (1978)	Adjusted Daily Census (1985)	Estimated Bed Need (1985)	Licensed Beds (1978)	Deficit (+) Surplus (-)
Big Horn	Big Horn County Memorial	2,776	8.6	17	16	1
Carbon	Carbon County Memorial	4,501	13.4	24	28	- 4
Fergus Petroleum & Judith Basin	Central Montana Hospital	10,348	29.0	45	47	- 2
Stillwater	Stillwater Community	3,542	11.2	21	27	- 6
Sweet Grass	Sweet Grass Community	1,353	3.5	9	17	- 8
Wheatland & Golden Valley	Wheatland Memorial Hosp.	1,619	3.6	9	23	-14
Yellowstone	Billings Deaconess Hosp.	50,919	174.7	214	176	38
	St. Vincent Hospital	72,352	248.2	296	225	71
	Subarea Total	147,410	492.2	635	559	76

Table 12 - 1985 Bed Need Estimates For General, Acute Care and Critical Care Units In South Central Montana Hospitals

The average daily census is based on the number of patient days reported in 1977 and is adjusted for expected population growth between 1977 and 1985.

$$\text{Adjusted ADC} = \frac{\text{Patient Days}}{365} \times \frac{\text{Population (1985)}}{\text{Population (1977)}}$$

This bed need model is based upon the probability that an unoccupied bed will be available 99.9 percent of the time when needed. It assumes that the daily census is distributed by a Poisson Distribution and that fluctuations occur around the average.

In utilizing this model, it is assumed that the primary catchment area for each hospital is the county in which it is located. Preliminary analyses of a detailed patient origin study show that approximately 70 percent of all admissions between July and September 1978 came from the county in which the facility is located. However, it is acknowledged that hospital catchment areas are not the same as county boundaries.

Census estimates were used for 1977 population figures. Montana Department of Community Affairs' estimates (medium series) were used to provide an estimate for the 1985 population. The utilization statistics reflect 1978 data from the hospital annual reports which are submitted to the State Department of Health and Environmental Sciences.

It is emphasized that these bed need calculations are rough estimates and are intended to be used as general guidelines when reviewing a hospital's application to replace, renovate or change its licensed bed capacity. The above assumptions prohibit more precise and detailed estimates. It is the responsibility of each hospital to provide detailed bed need estimates and supporting justification when applying for a certificate of need.

Because Montana has such a sparse population, the national goal of 4.0 beds per 1,000 population should not be applied to local situations. If it were applied at the local level, several small hospitals could not justify their existence, yet distance, accessibility and availability dictate that they be supported and remain open. If the 4.0 beds per 1,000 population were used to estimate the total number of hospital beds in the state, then more beds would be planned.

At the same time it is expected that the 1985 annual occupancy rate for all hospitals will be between 63 and 70 percent. The 1978 rate was 55.7 percent.

Tables 9 through 13 suggest that the following areas will need additional hospital beds by 1985:

Flathead County	-	24 beds
Lewis & Clark County	-	29 beds
Yellowstone County	-	109 beds

It appears that all three counties need additional general medical/surgical, critical care and obstetrical beds. Lewis & Clark County does not need additional pediatric beds.

Some areas appear to have substantial excess capacity. Those with 20 or more surplus beds include:

Lake County	-	22 beds
Missoula County	-	81 beds
Cascade County	-	72 beds
Hill and Blaine Counties	-	31 beds
Silver Bow County	-	58 beds
Custer and Powder River Counties	-	52 beds

Most of these are also areas with more than one hospital. Although it would appear that alternative uses for some of these facilities could be explored and possibly implemented without reducing the accessibility of hospital services, no

County	Hospital	Number Pat. Days (1978)	Adjusted Daily Census (1985)	Estimated Bed Need (1985)	Licensed Beds (1978)	Deficit (+) Surplus (-)
Carter	Dahl Memorial Hospital	1,129	3.2	9	16	- 7
Custer & Powder River	Holy Rosary Hospital	15,206	46.6	67	119	-52
Daniels	Daniels Memorial Hospital	1,401	3.9	10	8	2
Dawson & Wibaux	Glendive Community Hosp.	9,335	29.3	46	46	0
Fallon	Fallon Memorial Hospital	1,364	4.0	10	19	- 9
Garfield	Garfield County Hospital	235	0.6	3	8	- 5
McCone	McCone County Hospital	2,962	7.6	16	20	- 4
Phillips	Malta Hospital	6,131	17.9	31	30	1
Prairie	Prairie Community Hosp.	959	2.8	8	6	2
Richland	Community Memorial	12,676	41.2	60	55	5
Roosevelt	Roosevelt Memorial Hosp.	2,834	8.3	17	14	3
	Poplar Community Hosp.	3,050	8.9	18	22	- 4
	Trinity Hospital	7,205	21.0	35	42	- 7
Rosebud & Treasure	Rosebud Community Hosp.	1,647	4.8	11	18	- 7
Sheridan	Sheridan Memorial Hosp.	5,443	14.8	26	22	4
Valley	Frances Mahon Deaconess	9,271	32.9	50	48	2
	Subarea Total	80,848	247.8	417	493	-76

Table 13 - 1985 Bed Need Estimates For General, Acute Care and Critical Care Units In Eastern Montana Hospitals

specific recommendations are made to close any facility. A crude analysis of the potential savings to be realized by closing selected small hospitals indicates that the savings would be approximately equal to the closed hospital's annual payroll. This analysis assumes that adjacent hospitals would serve the patients currently served by the closed facility and does not take into account such negative factors as paying off the debt retirement and other fixed overhead costs of the closed facility, local economic impact (multiplier effect of lost wages from the local economy) and the potential that the remaining hospitals will have to increase personnel to handle the increased load.

Consolidation of some services (e.g., obstetrical and pediatric) is feasible and will yield substantial savings in communities where they are currently duplicated.

GENERAL HOSPITAL INPATIENT SERVICES (Medical/Surgical, Pediatric & Obstetrical Beds)

4.0 Justification for Exceptions to the National Guidelines

4.1 General Hospitals

The national guidelines identify two standards with which health plans must be consistent. These are:

- There should be no more than four non-federal, short-stay hospital beds for each 1,000 persons in a health service area except under extraordinary circumstances.
- There should be an average annual occupancy rate of at least 80 percent for all non-federal, short-stay hospital beds considered together in a health service area except under extraordinary circumstances.

With respect to the first standard, this plan, if fully implemented, calls for a bed-to-population ratio of 3.28 in 1985. If the number of beds now is the same in 1985, the bed-to-population ratio will be 3.83. The primary reason for this is that the state's population is expected to increase by 12 percent by 1985. These two estimates represent the expected high and low estimates for the number of hospital beds per 1,000 population expected in Montana by 1985. The realized ratio will probably fall somewhere in between.

The MHSA policy of asking the facility to voluntarily consider a reduction in bed capacity when rebuilding and renovating seems to be working. Since 1975 the number of licensed hospital beds in Montana has decreased about one percent per year.

The Native American and veterans populations are included in the population estimates because the majority of these population groups use community hospitals rather than special government facilities. Table 14 shows the estimated size of these population groups, the size of the facilities and the relative usage of these groups. This table shows that the usage (as measured by the number of admission per 1,000 population) of the respective government hospitals by Native Americans and veterans are considerably lower than the general populace, but these groups are considered to be high risk.

Similarly, these facilities weren't planned to handle all the health care needs of their respective groups. (Based on the different bed-to-population ratio.) The obvious explanation of these apparent inconsistencies is that members of these special populations use the general community facilities as well as the special government facilities. Therefore, the MHSA believes that population adjustments for these resources are not valid.

With respect to the second national standard (80% occupancy), the state must have an exception. This exception is based on the fact that 49 out of the 61 hospitals in Montana have less than 4,000 admissions per year. It is estimated that the annual occupancy rate of community hospitals in Montana will probably be between 59.3 and 69.2 percent in 1985. This plan calls for the larger hospitals in Montana to strive for higher occupancy rates. In fact, hospitals with more than 144 beds are expected to have occupancies greater than 80 percent.

4.2 Obstetrical Services

The national guidelines state the following three standards for obstetrical services:

1) They should be planned on a regional basis.

2) Units providing complicated services should have at least 1,500 births annually, and

3) The average occupancy rate of these units should be at least 75 percent.

This plan component and the one on neonatal intensive care units encourage and support the regional development of obstetrical services — with the understanding that the small community hospitals maintain the capability of performing

Population Group	Estimated Number (1977)	Beds Available (1977)	Admissions	Admissions Per 1,000 Population	Beds Per 1,000 Population
All Montanans	761,000	3,290	131,568	172.8	4.3
Native Americans	29,671[2]	86	3,725[1]	125.5	2.9
Veterans	101,000	282	4,573[3]	45.3	1.8

1) Based on 1976 data

2) Estimated as 3.9% of the total population

3) Based upon data from the Veteran's Administration (Denver Office)

Table 14 - Estimates of Performance Indicators of Three Hospital Systems in Montana

routine deliveries. One of the suggestions made in this plan has been to consider consolidating obstetrical units in multi-hospital communities.

Some Montana hospitals, however, cannot meet the criteria of 1,500 births annually, now or in 1985. The Neonatal Intensive Care Unit component identifies three facilities as Level II units. Three more provide specialized care beyond the normal delivery level. These are listed in Table 7. Billings, Missoula, Kalispell and Bozeman have only one facility offering obstetrical services. Yet, only St. Vincent Hospital in Billings meets and exceeds the national standards. Obstetrical services are offered in more than one facility in both Great Falls and Butte. If they were consolidated in one facility, Great Falls would comply with the national guidelines. The above communities are 120 plus miles apart, therefore inter-city transport of obstetrical patients is unreasonable.

Therefore, the MHSA requests an exception from the national standards for these Montana facilities.

Two general problems with the national guidelines emerge. First, although pediatric units are established in most of the major towns, there is still a very large land area and population which is outside the 30-minute guideline. Secondly, although units of 20 or more beds are desirable, the population base served by these hospitals cannot support them.

The Montana HSA has recommended that pediatric units in multi-hospital communities be consolidated. This could affect services in Butte, Great Falls, Missoula and Billings. It has been estimated that consolidation could amount to a systems savings of as much as $275,000 per year if it were implemented in all four of these communities. In the other communities, the MHSA is recommending that the number of pediatric beds be commensurate with current utilization patterns. This means a conflict between the MHSA's objectives, policies and recommendations and the national guidelines. Consequently, an exception is requested.

Using the stochastic planning model for estimating bed need, the MHSA is requiring units of 20 beds to have an average occupancy rate of at least 50 percent. However, we are not specifying how many beds are needed in each department. We feel that the allocation of beds within the facility should be the responsibility of the administrator.

Justification for these exceptions are based primarily on the lack of a sufficient population base to support such large units in Montana. If all pediatric units were required to have at least 20 beds, there would be a surplus of such beds. On the other hand, if all units were required to maintain an average annual occupancy of 65 percent, then this might lead to an insufficient bed supply so as to deny access to appropriate and reasonable medical care. (This means that a 10-bed unit must maintain an average daily census of 6.5 patients and if this were maintained, it is estimated that 10 percent of the time the unit would be full and no bed would be available for a new patient.)

4.3 Pediatric Services

The national guidelines specify the following criteria for pediatric units in urban areas:

1) Each unit should contain at least 20 beds, and

2) Units with 20 to 39 beds should have an average annual occupancy rate of 65 percent.

In Montana the MHSA is considering pediatric units in hospitals of 100 or more beds. Hospitals with bed complements of less than 100 beds usually use swing beds as needed for their pediatric patients and have no dedicated staff assigned specifically to pediatric coverage. This is roughly analogous to the "urbanized area" phrase in the guidelines.

Table 8 shows 1978 utilization statistics for these selected pediatric units in the larger hospitals in Montana. Figure 2 shows the location of these hospitals with a 30-mile radius superimposed on the map.

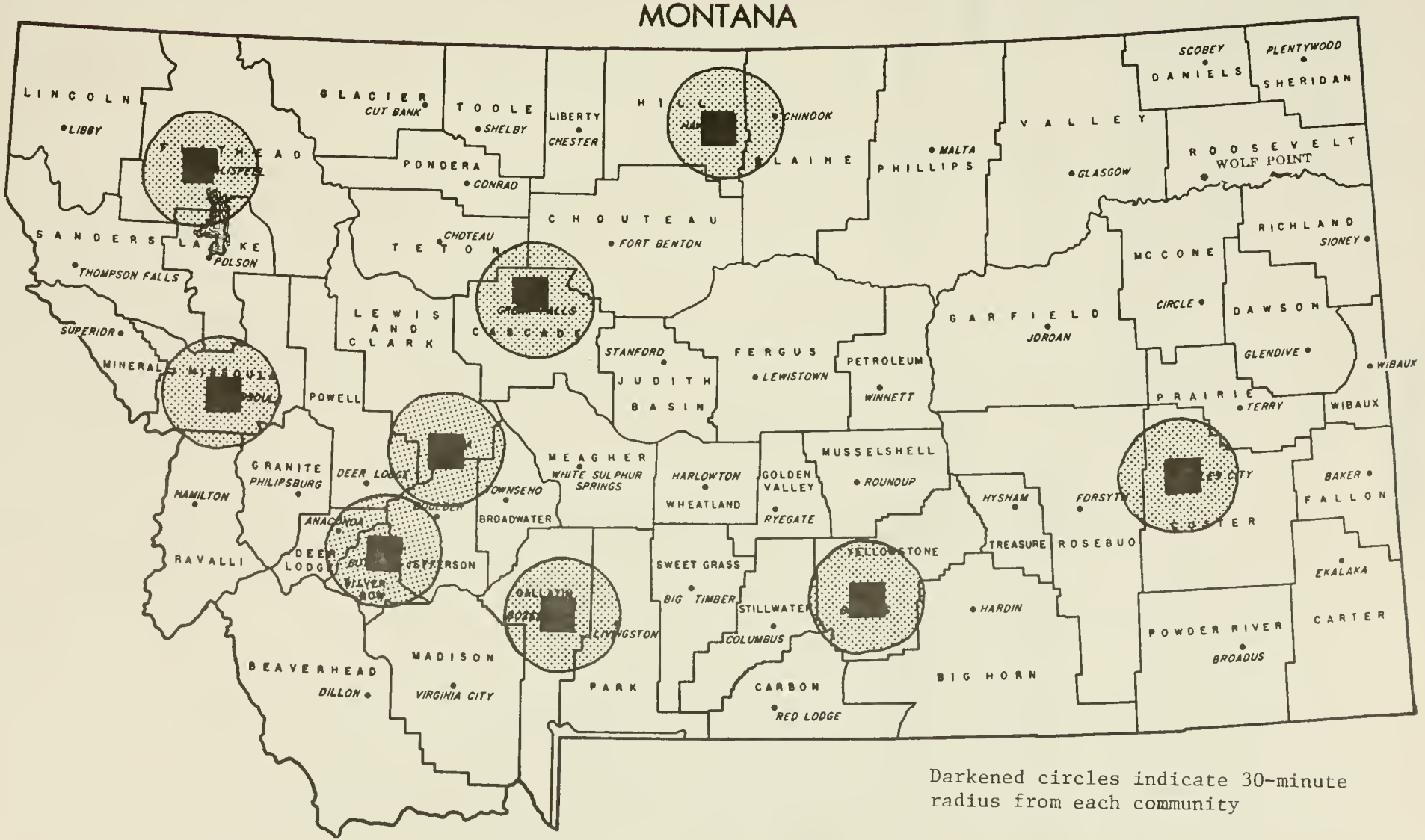


Figure 2 - Location of Hospitals in Montana With Pediatric Units

APPENDIX A

Total Annual Expenses, Estimated Adjusted Expenses per Inpatient Day, and Adjusted Expenses per Inpatient Admission in Montana Hospitals in 1978.

All statistics were provided by the Montana Hospital Association and were based upon data from a joint survey in which they cooperated with the Montana State Department of Health and Environmental Sciences.

"Expenses" represent the total cost of operating each hospital — both inpatient and outpatient.

"Cost per Day and Cost per Admission" statistics were calculated by the Hospital Association and adjusted to reflect only inpatient data using the following formula:

Cost/Day =

$$\frac{\text{Total Expenses}}{\text{Inpatient Days} + \text{Outpatient Visits} \cdot \frac{\text{Gross Outpt. Revenue per Outpt. Visit}}{\text{Gross Inpt. Revenue per Inpt. Day}}}$$

Cost/Admission =

$$\frac{\text{Total Expenses}}{\text{Inpatient Adms.} + \text{Outpatient Visits} \cdot \frac{\text{Gross Outpt. Revenue per Outpt. Visit}}{\text{Gross Inpt. Revenue per Admission}}}$$

SUBAREA, HOSPITAL, & CITY		EXPENSES	COST PER DAY	COST PER ADM.
EASTERN				
DAHL MEMORIAL HOSPITAL	EKALAKA	$ 217,453	$136.56	609.38
HOLY ROSARY HOSPITAL	MILES CITY	$ 3,433,139	$204.62	$1,118.62
DANIELS MEMORIAL HOSPITAL	SCOBEY	$ 357,955	$224.58	917.32
GLENDIVE COMMUNITY HOSPITAL	GLENDIVE	$ 1,849,409	$169.39	$ 940.10
FALLON MEMORIAL HOSPITAL	BAKER	$ 245,907	$121.69	$ 560.77
GARFIELD COUNTY HOSPITAL	JORDAN	$ 86,245	$187.54	$ 773.18
McCONE COUNTY HOSPITAL	CIRCLE	$ 296,068	$ 85.75	$ 466.59
MALTA HOSPITAL	MALTA	$ 533,071	$ 82.51	$ 502.82
PRAIRIE COMMUNITY HOSPITAL	TERRY	$ 205,985	$160.23	$ 985.00
COMMUNITY MEMORIAL HOSPITAL	SIDNEY	$ 2,849,976	$185.43	$1,015.35
ROOSEVELT MEMORIAL HOSPITAL	CULBERTSON	$ 343,742	$112.68	$ 669.47
POPLAR COMMUNITY HOSPITAL	POPLAR	$ 566,148	$167.99	$ 770.47
TRINITY HOSPITAL	WOLF POINT	$ 1,109,232	$139.79	$ 734.63
ROSEBUD COMMUNITY HOSPITAL	FORSYTH	$ 339,913	$159.74	$ 593.89
SHERIDAN MEMORIAL HOSPITAL	PLENTYWOOD	$ 455,911	$ 83.09	$ 491.59
FRANCES MAHON DEACONESS HOSPITAL	GLASGOW	$ 1,565,145	$175.38	$ 914.78
SUBAREA TOTAL		$14,455,299		

SUBAREA, HOSPITAL, & CITY		EXPENSES	COST PER DAY	COST PER ADM.
NORTH CENTRAL				
COLUMBUS HOSPITAL	GREAT FALLS	$11,785,872	$196.47	$1,194.94
MONTANA DEACONESS MEDICAL CENTER	GREAT FALLS	$11,761,166	$184.77	$1,047.65
BIG SANDY MEDICAL CENTER	BIG SANDY	$ 166,153	$100.87	$ 495.37
CHOUTEAU COUNTY DISTRICT HOSPITAL	FORT BENTON	$ 346,819	$171.34	$ 762.83
MEMORIAL HOSPITAL	CUT BANK	$ 1,005,853	$174.98	$ 845.19
NORTHERN MONTANA HOSPITAL	HAVRE	$ 4,864,074	$197.01	$ 933.10
LIBERTY COUNTY HOSPITAL	CHESTER	$ 355,118	$187.32	$ 727.81
PONDERA COUNTY HOSPITAL	CONRAD	$ 1,685,423	$142.50	$ 766.81
TETON MEDICAL CENTER	CHOTEAU	$ 614,086	$138.89	$ 684.27
TOOLE COUNTY HOSPITAL	SHELBY	$ 761,555	$252.79	$ 956.46
SUBAREA TOTAL		$33,346,119		

SUBAREA, HOSPITAL, & CITY		EXPENSES	COST PER DAY	COST PER ADM.
SOUTH CENTRAL				
BIG HORN COUNTY MEMORIAL HOSPITAL	HARDIN	$ 419,802	$134.14	$ 519.34
CARBON COUNTY MEMORIAL HOSPITAL	RED LODGE	$ 515,294	$106.47	$ 528.36
CENTRAL MONTANA HOSPITAL	LEWISTOWN	$ 2,309,775	$203.34	$1,056.33
STILLWATER COMMUNITY HOSPITAL	COLUMBUS	$ 619,553	$824.86	$160.92
SWEET GRASS COMMUNITY HOSPITAL	BIG TIMBER	$ 218,716	$120.75	$ 569.27
WHEATLAND MEMORIAL HOSPITAL	HARLOWTON	$ 428,982	$195.81	$ 782.76
BILLINGS DEACONESS HOSPITAL	BILLINGS	$12,681,702	$197.18	$1,386.16
ST. VINCENT HOSPITAL	BILLINGS	$14,908,532	$179.06	$ 978.88
SUBAREA TOTAL		$32,102,356		

SUBAREA, HOSPITAL, & CITY		EXPENSES	COST PER DAY	COST PER ADM.
SOUTHWESTERN				
BARRETT HOSPITAL	DILLON	$ 804,875	$159.36	$ 610.41
BROADWATER HOSPITAL	TOWNSEND	$ 206,766	$104.90	$ 510.53
COMMUNITY HOSPITAL OF ANACONDA	ANACONDA	$ 1,939,598	$187.83	$ 840.20
BOZEMAN DEACONESS HOSPITAL	BOZEMAN	$ 3,870,341	$178.13	$ 734.46
GRANITE COUNTY MEMORIAL HOSPITAL	PHILIPSBURG	$ 145,036	$250.11	$ 988.35
ST. PETERS HOSPITAL	HELENA	$ 7,064,555	$182.95	$1,049.23
SHODAIR CRIPPLED CHILDRENS HOSPITAL	HELENA	$ 1,307,675	$205.31	$ 699.10
MADISON VALLEY HOSPITAL	ENNIS	$ 269,945	$118.59	$ 658.12
RUBY VALLEY MEMORIAL HOSPITAL	SHERIDAN	$ 326,547	$131.21	$ 574.20
MOUNTAINVIEW MEMORIAL HOSPITAL	WHITE SULPHUR	$ 202,957	$161.43	$ 656.92
LIVINGSTON MEMORIAL HOSPITAL	LIVINGSTON	$ 1,300,008	$161.49	$ 755.98
POWELL COUNTY MEMORIAL HOSPITAL	DEER LODGE	$ 998,918	$172.32	$ 837.23
ST. JAMES COMMUNITY HOSPITAL	BUTTE	$ 8,240,285	$176.57	$1,028.30
SILVER BOW GENERAL HOSPITAL	BUTTE	$ 4,106,424	$165.10	$1,022.39
SUBAREA TOTAL		$30,783,930		

SUBAREA, HOSPITAL, & CITY		EXPENSES	COST PER DAY	COST PER ADM.
NORTHWESTERN				
KALISPELL REGIONAL HOSPITAL	KALISPELL	$ 6,071,162	$213.24	$ 971.91
NORTH VALLEY HOSPITAL	WHITEFISH	$ 1,576,778	$147.84	$ 692.03
ST. JOSEPH HOSPITAL	POLSON	$ 1,012,970	$135.85	$ 577.93
ST. LUKE COMMUNITY HOSPITAL	RONAN	$ 614,904	$120.39	$ 589.84
ST. JOHNS LUTHERAN HOSPITAL	LIBBY	$ 1,073,369	$149.40	$ 616.18
MINERAL COUNTY HOSPITAL	SUPERIOR	$ 361,945	$112.88	$ 418.30
MISSOULA COMMUNITY HOSPITAL	MISSOULA	$ 5,983,449	$241.72	$ 963.47
MISSOULA GENERAL HOSPITAL	MISSOULA	$ 2,004,367	$240.74	$1,254.82
ST. PATRICK HOSPITAL	MISSOULA	$10,394,388	$220.80	$1,219.91
MISSION VALLEY HOSPITAL	ST. IGNATIUS	$ 699,907	$175.97	$ 684.52
MARCUS DALY MEMORIAL HOSPITAL	HAMILTON	$ 1,396,976	$125.77	$ 542.24
CLARK FORK VALLEY HOSPITAL	PLAINS	$ 1,024,508	$191.59	$ 815.53
SUBAREA TOTAL		$32,214,723		

ESTIMATED EXPENSES AND COST STATISTICS FOR HOSPITALS IN MONTANA BY SUBAREA (1978)

APPENDIX B

Selected Patient Origin Statistics for Montana Hospitals

Discharges - Percentage statistic represents the proportion of county residents served by local hospital. Data source is **Patient Origin Report, July, August and September 1978,** Health Planning and Development Bureau.

Admissions - Percentage statistic represents the proportion of the hospital's admissions which come from the county. Data source is Unpublished data from the 1978 Hospital and Related Facilities Annual Report, Department of Health and Environmental Sciences (DHES), State of Montana.

Births - Percentage statistic represents the proportion of babies born to county residents who were born in that hospital. Data source is unpublished information from the Bureau of Records and Statistics, DHES.

Hospital	County	Total Discharges of County Residents (July-Sept 1978)	Percent Treated By Local Hospital (1978)	Total Hospital Admission (1978)	Percent Same County	Approximate Number Resident Births (1976)	Percent County Residents
St. John's Lutheran	Lincoln	426	63%	1,303	98%	283	35%
Kalispell Regional	Flathead	1,619	69%	6,278	81%	741	68%
North Valley	Flathead		26%	1,939	84%		27%
Clark Fork Valley	Sanders	326	65%	1,169	88%	138	55%
St. Joseph Hospital	Lake	698	36%	1,587	87%	323	38%
St. Luke Community	Lake		22%	834	99%		24%
Mission Valley	Lake		21%	902	85%		14%
Mineral County	Mineral	135	47%	318	88%	62	48%
Missoula Community	Missoula	2,201	39%	5,735	90%	1,096	97%
Missoula General	Missoula		10%	1,436	57%		0
St. Patrick	Missoula		48%	7,917	62%		0
Marcus Daly Memorial	Ravalli	643	76%	2,262	94%	241	72%

Table B-1 - Three Recent Patient Origin Indicators For Hospitals in Northwestern Montana

Hospital	County	Total Discharges of County Residents (July-Sept 1978)	Percent Treated By Local Hospital (1978)	Total Hospital Admission (1978)	Percent Same County	Approximate Number Resident Births (1976)	Percent County Residents
Glacier County Memorial	Glacier	382	42%	889	84%	255	28%
Indian Health Service	Glacier	N/A	N/A	N/A	N/A		48%
Toole County Hospital	Toole	238	53%	633	85%	100	62%
Pondera County Hospital	Pondera	395	74%	1,822	70%	121	64%
Teton Memorial Hospital	Teton	—	N/A	714	80%	108	57%
Montana Deaconess	Cascade	3,571	54%	N/A	N/A	1,468	76%
Columbus Hospital	Cascade		43%	8,463	72%		21%
Choteau County District	Choteau	284	21%	396	96%	92	38%
Big Sandy Medical Center	Choteau		15%	269	89%		7%
Northern Montana	Hill	955	80%	4,629	N/A	335	92%
Liberty County Hospital	Liberty	52	69%	384	58%	48	60%
Fort Belknap	Blaine	N/A	N/A	N/A	N/A	123	36%

Table B-2 - Three Recent Patient Origin Indicators For Hospitals in North Central Montana

Hospital	County	Total Discharges of County Residents (July-Sept 1978)	Percent Treated By Local Hospital (1978)	Total Hospital Admission (1978)	Percent Same County	Approximate Number Resident Births (1976)	Percent County Residents
Barrett Memorial	Beaverhead	338	61%	1,043	92%	134	35%
Ruby Valley Hospital	Madison	259	27%	476	70%	61	33%
Madison Valley Hospital	Madison		29%	395	66%		23%
Bozeman Deaconess	Gallatin	1,020	90%	5,022	78%	567	96%
St Peters	Lewis & Clark	1,537	74%	5,755	84%	577	93%
Shodair Crippled Childrens	Lewis & Clark		15%	1,361	83%		—
Broadwater Hospital	Broadwater	170	39%	405	88%	47	57%
Mountainview Memorial	Meagher	98	35%	245	N/A	44	41%
Granite County Memorial	Granite	89	20%	124	94%	43	0
Powell County Memorial	Powell	314	65%	1,075	84%	103	77%
St. James Community	Silver Bow	2,019	62%	7,653	76%	628	67%
Silver Bow General	Silver Bow		31%	—	N/A		31%
Community Hospital of Anaconda	Deer Lodge	628	62%	907	93%	201	60%
Livingston Memorial	Park	537	65%	1,515	89%	175	80%

Table B-3 - Three Recent Patient Origin Indicators For Hospitals in Southwestern Montana

Hospital	County	Total Discharges of County Residents (July-Sept. 1978)	Percent Treated By Local Hospital (1978)	Total Hospital Admission (1978)	Percent Same County	Approximate Number Resident Births (1976)	Percent County Residents
Central Montana Hospital	Fergus	650	83%	1,992	N/A	182	93%
Wheatland Memorial	Wheatland	121	64%	405	76%	48	31%
Roundup Memorial	Musselshell	not operational	N/A	not operational	N/A	85	39%
Stillwater Community	Stillwater	195	64%	N/A	N/A	82	74%
Sweetgrass Community	Sweetgrass	98	46%	287	85%	45	40%
Carbon County Memorial	Carbon	332	40%	907	100%	100	43%
Big Horn County Memorial	Big Horn	—	42%	717	82%	263	25%
Crow Agency	Big Horn	N/A	N/A	N/A	N/A		49%
Billings Deaconess	Yellowstone	3,541	27%	8,179	57%	1,750	0
St. Vincent	Yellowstone		70%	13,235	58%		96%

Table B-4 - Three Recent Patient Origin Indicators For Hospitals in South Central Montana

Hospital	County	Total Discharges of County Residents (July-Sept. 1978)	Percent Treated By Local Hospital (1978)	Total Hospital Admissions (1978)	Percent Same County	Approximate Number Resident Births (1976)	Percent County Residents
Malta Hospital	Phillips	300	67%	868	95%	87	60%
Frances Mahon Deaconess	Valley	415	76%	1,989	—	214	87%
Daniels Memorial	Daniels	115	73%	343	94%	53	74%
Sheridan Memorial	Sheridan	242	77%	920	82%	82	74%
Roosevelt Memorial	Roosevelt		17%	477	84%		8%
Trinity Hospital	Roosevelt	590	42%	1,371	73%	211	35%
Poplar Community	Roosevelt		25%	665	95%		29%
Garfield County Hospital	Garfield	72	38%	57	91%	32	25%
McCone County Hospital	McCone	157	64%	619	70%	51	33%
Community Memorial	Richland	621	91%	2,519	91%	201	75%
Glendive Community	Dawson	425	72%	1,682	80%	194	93%
Rosebud Community	Rosebud	321	28%	443	79%	226	26%
Fallon Memorial	Fallon	515	9%	—	—	63	54%
Dahl Memorial	Carter	55	53%	253	83%	29	45%
Holy Rosary	Custer	579	79%	2,799	66%	241	94%
Prairie Community	Prairie	90	49%	173	92%	26	12%

Table B-5 - Three Recent Patient Origin Indicators For Hospitals in Eastern Montana

4.2
SUMMARY
ACUTE CARE PSYCHIATRIC UNITS

In recent years the trend toward deinstitutionalization has increased the responsibility of local communities to provide services. This component is limited to establishing guidelines for the future development of regional psychiatric units in selected hospitals to serve those needing medically related care in the community.

These units are staffed by psychiatric nurses and other mental health specialists under the direction of a psychiatrist. Characteristically, patients admitted to these psychiatric units exhibit behavior related to depression and psychosis stay for a relatively short period of time. Stays rarely exceed ten or eleven days.

The development of these units is heavily dependent on the recruitment of psychiatrists to the state. The possible use of the National Health Service Corps to recruit the needed number of psychiatrists will be addressed in another component.

Kalispell, Helena, Havre and Bozeman may economically justify the development of acute care psychiatric units. It is recognized that a need exists in Eastern Montana for such care, but that a unit cannot be justified. The current methods of delivering acute care psychiatric services in Eastern Montana are to be supported.

ACUTE CARE PSYCHIATRIC UNITS

Goal:

To foster the rational development of a number of regional, acute care psychiatric units in Montana hospitals to provide short term psychiatric care. As a planning goal, bed need in this plan is based on a use rate of 69.8 patient days per 1,000 population.

Objectives:

1) By 1985, establish short term psychiatric units in Kalispell, Helena and Bozeman if they can be shown to be financially feasible, and to serve a sufficient population to justify at least 10 beds without jeopardizing existing services in nearby cities.

2) By 1980, support legislation requiring all health insurance policies sold in Montana to include coverage of acute psychiatric services.

3) By 1980, emphasize the importance of linkages, coordination and cooperation between acute psychiatric units and local community mental health services. Cooperation between local inpatient and outpatient programs is vital to insure complete coverage.

Recommended Review Criteria

1) Each hospital desiring to establish such a unit should have at least one psychiatrist on its staff.

2) Each unit should be able to be self-supporting within three years after initiation of services.

3) Each unit should contain at least 10 beds.

4) Each unit should be staffed with psychiatric nurse specialists and should be able to comply with the **Standards for Psychiatric Facilities**[1] published by the American Psychiatric Association.

5) Units should not be duplicated in a single community.

1.0 Background

The mental health delivery system in the United States has undergone rapid and major revision in recent years. The trend has been toward the provision of services to patients in their own home communities. Underlying this trend is the principle that removing a person from "normal home and community makes resolution of problems more difficult than maintenance of the ill person in the home and community."[2]

The utilization of local services has been steadily increasing as state and psychiatric hospitals have decreased in size, or, in some areas, closed completely. Since 1963, with the passage of the Community Mental Health Centers Act, the resident populations of these hospitals have decreased nationwide by 45 percent.[3]

In this transition, it has been necessary for the large community hospitals to develop special units to care for acutely ill psychiatric patients for short periods. Rarely do these stays exceed ten or eleven days.

Consequently, this plan component will be limited to establishing guidelines for the future development of psychiatric units in selected hospitals. Although most hospitals have the capability to treat psychiatric patients when necessary, few hospitals have the staffing to maintain distinct units. These hospitals, in turn, serve as a referral source for the other hospitals in the area.

Although this component does not address the services delivered by local community mental health centers, they are another community resource with responsibilities in this area. The importance of good linkages between the acute psychiatric units is stressed so a full range of services can be provided to the patient.

The characteristics which set psychiatric units apart from other units in a hospital are:

1) The patients receive services from and under the direction of a psychiatrist.

2) The unit is staffed by psychiatric nurses and other mental health specialists. The nurse staffing ratio in a psychiatric unit is usually higher than in other units in the hospital (7.5 hours/patient compared to 5.5 hours/patient in other services).

3) The length of stay in these units is usually longer than other units in the hospital, but is considerably shorter than in psychiatric facilities such as the state mental hospital at Warm Springs.

4) Special admission forms are used which enables the hospital to keep the patient up to five days for examination.

The majority of patients admitted to psychiatric units in Montana appear to be:[4]

— Very depressed/often suicidal
— Acutely psychotic
— Have some form of severe organic brain syndrome
— Have severe personality and behavioral disorders

It appears that a significant proportion of the patients admitted to these units are adolescents. Many appear to be awaiting residential treatment programs. If these were to be developed, pressure would be taken off the acute psychiatric units.

2.0 Description of the Current Situation

There are presently four hospitals in Montana that have psychiatric units, are staffed by professional personnel and utilize therapeutic treatment modalities. These are Billings Deaconess Hospital, Montana Deaconess Medical Center in Great Falls, St. Patrick Hospital in Missoula and Silver Bow General Hospital in Butte. The location of these facilities and their general catchment areas are shown in Figure 1. Other hospitals in the state have security rooms for psychiatric patients or will use a general bed or room for such patients.

There is no formal acute psychiatric unit in any hospital in Eastern Montana. As a result, a unique method of providing inpatient psychiatric care has been developed. Persons in need of inpatient treatment for acute psychiatric illnesses are hospitalized in community hospitals, and treatment plans are developed through the collaboration of local physicians, hospital personnel and mental health professionals. When situations arise where patients are in need of a more intense, structured program, appropriate referrals are made. This method has proven effective as evidenced by the increased numbers of local hospitalizations and decreased commitments to Warm Springs State Hospital.

Hospital	Number Beds	Total Admissions	Total Inpatient Days	Average Length of Stay (Days)	Occupancy Rate Percent
Montana Deaconess Medical Center — Great Falls	28	770	5,912	7.7	57.8
St. Patrick Hospital — Missoula	17	808[1]	4,465[1]	5.5	72.0
Billings Deaconess Hospital — Billings	21	465	6,580	14.2	85.8
Silver Bow General Hospital — Butte	18	194	3,445	17.8	52.4
TOTAL	84	2,237	20,402	9.1	66.5

1) Includes alcohol and drug detox patients

Table 1 - Admission and Utilization Data For Acute Care Psychiatric Units in Montana

Source: Unpublished data from the 1978 Hospital and Related Facilities Annual Report, Department of Health and Environmental Sciences, State of Montana.

The number of beds, total admissions, length of stay and occupancy rates of the four hospitals with psychiatric units are indicated in Table 1. In Montana, the average length of stay for psychiatric unit patients is 9.0 days as compared to the national average of 11 days.[5]

One of the problems in developing a plan for psychiatric units in Montana is that there is a lack of psychiatrists outside of the metropolitan areas of the state. Figure 1 shows the location of practicing psychiatrists currently in the state. It is emphasized that psychiatric units cannot function without a psychiatrist on staff.

A second problem in Montana is that the provision of psychiatric services is often quite costly to the hospital due to the fact that mental health care insurance is not often comprehensive, and that a large percentage of mental health patients are not covered by third party payors. Thus, decisions about treatment and hospital stay have to be made without knowledge of whether the patient will be accepted for insurance to cover the hospital bill.

3.0 Estimated Future Resource Requirements

In 1975, the Governor's Advisory Council on Mental Health recommended that a selected number of communities consider establishing acute psychiatric units. The intent of this recommendation was a recognition of the fact that a minimum number of geographically dispersed units were needed to provide complete coverage of the state. The MHSA task force on acute care psychiatric units agrees with this concept with the following qualifications:

1) Each unit must be under the direction of a psychiatrist.

2) Units must be large enough to be self-supporting.

3) Services should not be duplicated in a community.

The reasoning behind the first criterion is that these units are medical facilities and patients can only be admitted by a physician. Consequently, it was felt that these units should be developed only after the hospital has placed a psychiatrist on its medical staff. (A psychiatrist can practice without a unit, treating patients on a outpatient basis and using general hospital beds as needed; but a unit cannot function without a psychiatrist.)

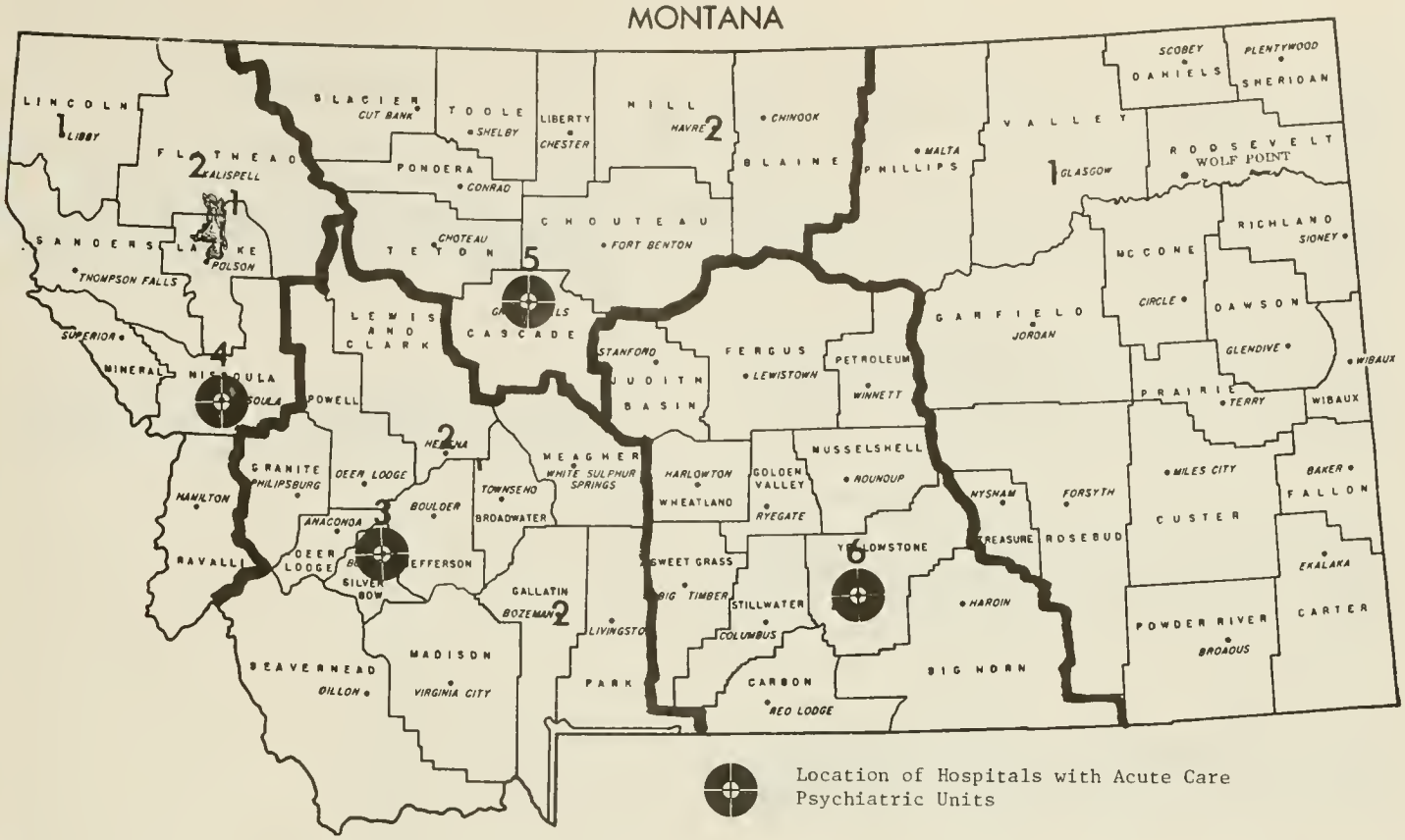
Thus, the development of these units is heavily dependent on the recruitment of psychiatrists to Montana. The possible use of National Health Service Corps (NHSC) psychiatrists is addressed in another component.

Based upon the past experience of existing units in Montana, units of less than ten beds cannot support themselves. It has been estimated that a 15-bed unit must experience an annual occupancy rate of 80 percent and serve a population of at least 150,000 persons to break even.

The third criterion is self-explanatory. Up to this time, these units have not been duplicated in a community in Montana. It appears that economies of scale can be realized in these units (the larger the service, the lower the unit cost); and should more than one hospital offer this service, then the average cost would be substantially higher.

Only crude estimates of bed need can be developed at this time. The estimates assume that each unit will experience a patient utilization rate (psychiatric patient days per 1,000 population) which is the same as an average rate that the four existing units experienced in 1978. The catchment areas of individual units are not defined; therefore, the local county population is assumed to be the primary catchment area.

Another factor which cannot be addressed at this time is the impact of group homes and other less restricted living arrangements for the mentally ill. The availability of these services locally should lessen the need for acute care psychiatric units so that they can be used only for the most seriously ill patients. The presence of these group homes may indicate the need for acute backup services which are furnished by psychiatric units.



Location of Hospitals with Acute Care Psychiatric Units

2 Number of Psychiatrists in a given community

Figure 1 - Location of Acute Care Units And Psychiatrists in Montana

	1985 County Population	Projected Average Daily Census[1]	Estimated 1985 Bed Need[2]	Number Beds Currently Licensed	Deficit (Surplus)
Northwestern					
Missoula (Missoula)	78,171	14.9	26	17	9
Kalispell (Flathead)	56,402	10.8	21	-	21
North Central					
Great Falls (Cascade)	88,274	16.9	29	28	1
Havre (Hill)	19,641	3.8	10	-	10
Southwestern					
Butte (Silver Bow)	44,457	8.5	17	18	(1)
Helena (Lewis & Clark)	44,931	8.6	17	-	17
Bozeman (Gallatin)	44,058	8.4	17	-	17
South Central					
Billings (Yellowstone)	126,106	24.1	39	21	18
Eastern					
Miles City (Custer)	14,642	2.8	8	-	8
Glendive (Dawson)	13,067	2.5	7	-	7
Sidney (Richland)	12,093	2.3	7	-	7
Glasgow (Valley)	16,325	3.1	8	-	8

1) Based upon an average use rate of 69.8 psychiatric inpatient days per 1,000 population in the Great Falls, Missoula, Butte and Billings Psychiatric Units in 1978.

2) Based on the probability that an unoccupied psychiatric bed will be available 99.9% of the time, using the formula, Beds Needed = ADC + 3.0 $\sqrt{ADC}$

Table 2 - Estimated Bed Need for Acute Care Psychiatric Units in Selected Montana Communities

Because of the above assumptions, individual hospitals wishing to develop one of these units will be able to more precisely estimate the local need for this service.

Table 2 presents the estimated bed need for acute care psychiatric units in a number of selected hospitals across Montana. Each of these hospitals have approximately 100 beds and serve as regional referral centers.

The bed needs are estimated using the same model as used in the acute care component. They are based on a 99.9 percent chance that an unoccupied bed will be available when needed. This procedure assumes that a ten-bed unit would have an annual occupancy rate of 40 percent — a utilization level which may not be self-supporting.

Based on these estimates, it appears that Kalispell, Havre, Helena and Bozeman may justify the development of acute care psychiatric units in their hospitals. Given the sparsely populated, vast geographic area of Eastern Montana, such a single psychiatric unit may not be feasible — or even desirable. The methods currently used in the subarea to provide acute psychiatric services to residents must continue to be supported.

With the exception of Billings and Missoula, each of the cities currently having these units appear to be adequately served. With the rapid growth expected in these two communities, expansion of the current services may be justified.

REFERENCES

1) **Standards for Psychiatric Facilities**, The American Psychiatric Association, Washington, D.C., 1967.
2) Leona L. Bachrach, Ph.D., **Psychiatric Bed Needs: An Analytical Review**, U. S. Department of Health, Education and Welfare, Publication No. (ADM) 75-205, 1975.
3) **Ibid.**
4) **Ibid.**
5) Daniel S. Levine, **The Cost of Mental Illness**, Final Report, September, 1974, prepared for the National Institute of Mental Health, DHEW, page 20.

4.3
SUMMARY
CLINICAL LABORATORIES

Clinical laboratory services examine specimens from the human body to help detect, diagnose or monitor a patient's illness.

A major trend in clinical laboratories has been toward heavier workloads. The demand for laboratory services is increasing at an annual rate of 14-18 percent.

There are problems in establishing exactly what procedures are presently available in Montana and the quality of those services. Most types of laboratory procedures can be performed in the state, but there are more sophisticated tests referred to other out-of-state medical centers.

Thirty-one pathologists practice in Montana. Many of these pathologists serve several hospitals and cannot make required periodic visits to hospitals they serve.

The number of qualified medical technologists and technicians in the state is considered inadequate for the population served. There is also a problem with maldistribution between urban and rural areas.

CLINICAL LABORATORIES

Goals:

1. Quality laboratory services are an integral part of the health care system and should be available and easily accessible to every Montanan at a reasonable cost.
2. The State Laboratory Division, with input from an ad hoc committee of laboratory professionals, should continue to emphasize continuing education and quality assurance programs, taking care not to unnecessarily duplicate existing resources but filling gaps where they exist.
3. Initiate a cooperative effort to study the issue of licensing and certification of laboratory facilities and personnel.

Objectives:

1. By 1983, the feasibility of sharing or centralizing laboratory services should be studied. Places where sharing or centralizing may be feasible are Billings, Great Falls, Missoula, Miles City, Helena and Butte. Warm Springs and Galen might consider combining their services.
2. By 1985, large hospital and large independent laboratories should consider marketing their services to physicians' offices, group practice clinics, small hospitals and small laboratories.

Recommended Review Criteria:

1. Unnecessary duplication of laboratory testing services should be avoided where possible; for example, by sharing laboratory equipment or facilities.
2. Laboratories should participate in successful internal, external, and "blind" quality assurance testing programs to avoid laboratory errors. To further avoid the hazards of laboratory errors, improve the efficiency of laboratory services and better serve the patient maintenance of and adequate assurance for reagent quality programs should exist.
3. Depending on the test procedure involved, turn around time should be minimized.
4. Medical audits should include laboratory utilization as a management tool to reduce costs, improve efficiency and maintain quality.
5. Emergency laboratory services should be available to patients (either at a hospital or by arrangement with another laboratory) on a 24-hour a day, seven day a week basis, with qualified laboratory personnel capable of performing the needed tests, on-call.
6. To be valid, all laboratory tests must be performed within specified time intervals. If the specimen received by a laboratory has been substantially delayed, the results may not be useful for accurate diagnosis. Thus, the proposed facility should be located within an acceptable distance from where the specimens are collected.
7. Because a technical or clerical laboratory error can lead to medical mismanagement of a patient, internal and external quality assurance is important. All clinical laboratories (including those located at hospitals, group practices, physicians' offices, public health departments, and independent sites) should participate in a quality assurance program which includes, at a minimum, the following:
   - Successful participation in an accepted (internal) state-approved proficiency testing program, to include Levy-Jennings graphs for plotting with the necessary statistical data (mean, standard deviation and allowable limits, i.e., plus or minus two standard deviations).
   - Successful participation in an accepted state approved proficiency testing (external) program, which involves testing unknown samples sent to the laboratory by the testing program.
   - Laboratory personnel perform only those tests for which they have proper training and experience.
   - Proper preventive (periodic) corrective maintenance, quality reagent assurance programs and documenting of equipment performance, instrumentation, reagents and supplies.
   - Use of an acceptable standard operating procedural (methodology) manual listing approved procedures for each test performed.
   - Documentation of an ongoing in-service training program.
   - Availability and documentation of other continuing education programs for medical laboratory staff, as well as education of physicians in the effective use of laboratory services.
   - Use of a valid, properly identified (labeled) specimen and an adequate records management system.

   Examples of available proficiency programs include those of the College of American Pathologists, the Center for Disease Control, the American Association of Bioanalysts, and the American Society for Internal Medicine.

1.0 Background

Clinical (medical) laboratory services examine specimens from the human body to help detect, diagnose or monitor a patient's illness. Clinical laboratories can be located in hospitals; group practice clinics; physicians' offices; independent sites; industrial sites, federal, state, and local health departments and a variety of other settings.

The work performed at these laboratories (not necessarily all laboratories) can be separated into the following specialties and subspecialties:

1. Laboratory Medicine
   (Clinical Pathology)
   A. **Microbiology**
      Bacteriology
      Virology
      Parasitology
      Mycology
      Mycobacteriology (TB)
   B. **Immunology** (Serology)
      Syphilis
      Non-syphilis
   C. **Immunohematology** - Blood Banking
   D. **Hematology**
   E. **Coagulation**
   F. **Chemistry**
      Clinical Biochemistry
      Nuclear Medicine
      Radioimmunoassay
      Toxicology
      ELISA
      Special Chemistry
   G. **Urinalysis**

2. **Anatomical Pathology**
   - A. **Histopathology**
     Surgical Pathology
     Autopsy Pathology
   - B. **Cytology**
   - C. **Histochemistry**
   - D. **Electronmicroscopy**

A glossary of the above terms can be found in Appendix 4.

Public health laboratories are concerned primarily with the prevention and control of infectious diseases, with epidemiologic studies of such diseases, and with environmental sanitation. In some instances public health laboratories are also concerned with, and involved in, providing proficiency testing programs to clinical laboratories.

The studies performed at any particular laboratory will be determined by a number of factors, including the capabilities of the laboratory personnel, the range of medical specialties referring laboratory tests and the scope and volume of medical services available in a community. Clinical laboratory services adequate to meet the demands of the medical staff must be available 24 hours a day, 7 days a week, including holidays. Basic laboratory services necessary for routine examinations are maintained in the hospital.

The College of American Pathologists sponsors a voluntary inspection and accreditation program for laboratories that identifies four levels of care through its proficiency testing programs:

- Physicians' Office Laboratories
- Basic Laboratories (small hospital laboratories serving fewer than 100 beds or small independent laboratories)
- Comprehensive Laboratories (large hospital laboratories serving 100 or more beds and large independent laboratories doing sophisticated procedures in microbiology, chemistry, hematology, and/or blood banking)
- Special Laboratories (sophisticated microbiology, serology, and toxicology laboratories).

During the past several decades, a major trend in clinical laboratories has been toward heavier workloads. The demand for laboratory services is expanding at an annual rate of 14-18 percent. Factors contributing to these increased workloads include:

- Technological advances which have brought about new, often more sophisticated, difficult, and time-consuming tests and procedures.
- Increasing use of the laboratory tests by the medical profession, partly because of more emphasis on use of the laboratory in physician training and partly because physicians are defending themselves against the threat of malpractice suits.
- Increased use of the laboratory in monitoring drug effectiveness and drug interactions.
- Increased reimbursement for laboratory tests by third party payors.
- Population increases.
- Demand for improved medical treatment.

2.0 Description of the Current Situation

It is presently difficult to determine exactly what procedures are available in Montana, the number of procedures that must be referred out of state, and how many procedures are done totally. Although each laboratory in the state is supposed to register with the Laboratory Division of the State Department of Health and Environmental Sciences, the Divison has no control method for insuring that this is done. In addition, the Division's registration form requires information regarding the number of procedures being done in various test categories, but the reliability of each laboratory's report is questionable. Some are clearly estimates and it is difficult to determine which tests a laboratory should include in a particular category.

Most types of laboratory procedures can be performed in the state, with the exception of extremely sophisticated tests which are referred to Oregon, Washington, Colorado, California, New Jersey, and other out-of-state medical centers. In addition, some physicians send a large number of specimens to out-of-state laboratories for routine examinations.

Thirty-one pathologists practice in Montana. Since every hospital laboratory is required to have the service of a pathologist on at least a monthly consulting basis, many of these pathologists serve several hospitals. Montana Hospital Licensing and federal Medicare and Medicaid programs require periodic visits by these pathologists to the hospitals. Because of shortage of pathologists' time, arrangements are made to permit a chief, or expert medical technologist from a larger hospital, working under the supervision of the pathologist, to perform some of these interim visits.

The number of qualified medical technologists and technicians in the state is considered inadequate for the population served and there is a problem of maldistribution between urban and rural areas. Colleges and universities in the state training medical technologists are Carroll College in Helena, the University of Montana in Missoula, Montana State University in Bozeman, Montana Institute of Technology in Butte and Eastern Montana College in Billings. Medical technology internships are available at St. James Hospital in Butte and Columbus and Deaconess Hospitals in Great Falls. In Missoula, The Western Montana Center for Medical Technology has established an internship program which uses area hospitals.

To meet the demands placed upon them by heavier workloads and to benefit from improved technology, many laboratories have automated their equipment procedures. This has allowed them to process larger numbers of test samples and rapidly perform multiple tests on a single sample, with increased accuracy and precision. However, manual methods are still used by many laboratories. Manual methods continue to be used both for routine work and for backup if automated equipment fails.

Many small laboratories cannot install automated equipment because they do not do a volume of tests to justify the cost. Automation is more feasible in laboratories which perform a high volume of similar tests. To create this volume, and to eliminate costly duplication of sophisticated equipment, many areas have begun sharing or centralizing laboratory services.

Another trend in laboratory services has been toward greater regulation. Part of this regulation is the result of Medicare/Medicaid requirements. Allegation of laboratory inaccuracy, fraud and abuse has led to increased regulation. Congress passed the Clinical Laboratory Improvement Act of 1967 (CLIA 67) to regulate laboratories operating in interstate commerce.

3.0 Plan for the Future

An estimate of laboratory service need should be based on:

- Gaps in existing services.
- Health status of area residents, including incidence and prevalence of specific illness, environmental problems affecting health, and preventive health problems.
- Estimated growth of laboratory services.

- Comparisons of service area and population with similar areas.

Because of the problems described in obtaining reliable data on clinical laboratories, it is difficult to determine where gaps exist in laboratory services in the state.

The estimated growth of laboratory services, based on trends over the past several years, is 14-18 percent per year. To what degree laboratories will need to expand will be determined by a combination of the above factors.

Individual laboratories can compare the size of their service areas and hospitals with similar laboratories to approximate the volume they may expect. Nationally, the trend is toward hospital laboratories performing more tests per hospital admission with increasing hospital size. According to one report, the median number of laboratory tests per hospital admission in 1976, by hospital size was:

Less than 50 beds	50-74 beds	75-99 beds	100-149 beds	150-199 beds	200-299 beds
14.73	17.66	19.35	22.19	22.73	26.93

A comparison of Montana hospitals with this national data is not possible without a breakdown of inpatient versus outpatient tests. These data, although gathered as part of each hospital's annual report form, are not reliable because some hospitals apparently report laboratory visits instead of individual procedures.

4.4
SUMMARY
DIAGNOSTIC IMAGING

Diagnostic radiology, nuclear medicine, ultrasound and xeromammography equipment, used to visualize internal body structures, are typically found in the radiology and/or laboratory departments of hospitals, in physicians' offices, and in general medical clinics. The costs of the equipment associated with these services almost always require their purchase and/or replacement to be reviewed.

This component documents where these services are presently being provided and their current levels of utilization. The plan lacks specific guidelines and standards, but emphasizes financial feasibility, minimal duplication and qualifications of professionals providing the service.

To achieve rational development of an accessibility to diagnostic imaging services throughout Montana, the MHSA will consider developing specific guidelines for the expansion of nuclear medicine, ultrasound and xeromammography by 1980. By 1985 each diagnostic radiology facility would ideally have the staff, equipment and space for the appropriate patient load.

DIAGNOSTIC IMAGING

Goal:

To provide for the rational development of diagnostic imaging (radiology, nuclear medicine, ultrasound, and xeromammography) services in Montana. These services should be reasonably accessible to the population while also cost justified and non-duplicated.

Objectives:

1. By 1985, each diagnostic radiology facility should have equipment, staff and space commensurate with its patient load.
2. By 1980, consider developing specific guidelines for the expansion of nuclear medicine, ultrasound and xeromammography facilities.

Review Criteria For Diagnostic Imaging Facilities

1. Each service should be under the supervision of a physician trained and/or experienced in the field (diagnostic radiology, nuclear medicine, ultrasound, and xeromammography). In most cases this would be a general radiologist, but other physicians may have sufficient training in nuclear medicine and ultrasound to satisfy this criterion.
2. Appropriately qualified and trained support personnel must be available to perform the procedures.
3. Duplication of the same service in the immediate area should not be encouraged.

1.0 Background

The term diagnostic imaging refers to those medical procedures which are used to visualize internal body structures. These include the fields of:

- Diagnostic Radiology
- Nuclear Medicine
- Ultrasound
- Xeromammography

Diagnostic radiology involves the use of x-rays; nuclear medicine involves the insertion of radioactive tracer materials (radioisotopes) into the patient's body; ultrasound functions much like sonar, utilizing sound waves to penetrate tissues and then recording their echoes. Ultrasound is particularly useful in obstetrical services to monitor fetal heart beats. Both nuclear medicine and ultrasound have some therapeutic applications, but they are primarily used in diagnostic work. Xeromammography is a special diagnostic procedure used to detect breast cancer.

In a hospital, diagnostic radiology, ultrasound and xeromammography are usually found in the radiology department under the supervision of a general radiologist. Nuclear medicine may be found either in the radiology department under the supervision of a general radiologist or in the laboratory department under the supervision of a pathologist. A large proportion of the nuclear medicine studies require that samples be analyzed in the laboratory. These types of procedures (i.e., those done in the laboratory) are called *in-vitro* procedures while the radiological procedures are primarily *in-vivo* procedures. Each of these services can also be found in ambulatory settings such as physician offices and general medical clinics.

The purpose of these guidelines is to document where these services are currently being provided and to establish general criteria for the review of the proposed development of new services and the expansion of existing services in Montana. It is emphasized that all hospitals must provide at least basic radiology services. The more complex radiological, nuclear medicine and ultrasound equipment, however, must be rationally allocated so that they are efficiently utilized and accessible to all Montanans. More and more hospitals are considering expanding their services to include nuclear medicine and ultrasound capability.

The equipment associated with these services is extremely expensive and their purchase, except to replace existing equipment, would probably be reviewed by the Health Systems Agency. Some typical minimum costs are:

Diagnostic Radiology

- General radiographic (X-ray) unit . . . . . $ 40,000
- Radiographic and Fluoroscopic Room 170,000
- General Purpose Special Procedures Room (for specialized studies) 300,000

		Inpatient			Outpatient		
County	Hospital	Radiological Exams	Patient Days	Exam P. Days	Radiological Exams	Visits[1]	Visits Exam
Lincoln	St. John's Luth.	936	4,587	.20	3,789	6,341	1.67
Flathead	Kalispell Reg.	N/A					
	North Valley	4,457[2]					
Sanders	Clark Fork Valley	2,729[2]					
Lake	St. Joseph's	1,370	6,943	.20	1,874	8,775	4.68
	St. Luke Comm.	499	3,584	.14	2,093	4,768	2.28
	Mission Valley	354	1,548	.23	539	2,928	5.43
Mineral	Mineral County	368	1,331	.28	1,324	4,389	3.31
Ravalli	Marcus Daly	1,346	9,390	.14	3,328	3,565	1.07
Missoula	Missoula General	1,991	8,399	.24	1,061	8,457	7.97
	Missoula Comm.	6,044	23,295	.26	4,086	14,068	3.44
	St. Patrick	15,216	46,275	.33	7,170	16,905	2.36
	Total	**35,310**	**105,352**	**.34**	**25,264**	**70,196**	**2.78**

1) Includes Emergency Visits
2) Inpatient and Outpatient Visits not separated

Table 1
Number of Inpatient & Outpatient Diagnostic Radiological Procedures Performed in Northwestern Montana Hospitals (1977).

County	Hospital	Inpatient Radiological Exams	Inpatient Patient Days	Inpatient Exam P. Days	Outpatient Radiological Exams	Outpatient Visits[1]	Outpatient Visits Exam
Glacier	Glacier Co. Mem.	1,442	3,517	.41	2,445	6,094	2.49
Toole	Toole County	650	2,496	.26	647	2,851	4.40
Pondera	Pondera County	2,661	9,682	.27	1,410	3,937	2.79
Teton	Teton Memorial	765	3,371	.23	1,087	2,845	2.62
Cascade	Montana Deacon.	20,978	60,179	.35	8,419	27,826	3.31
	Columbus	8,612	53,512	.16	6,269	25,483	4.06
Choteau	Choteau Co. Dis.	513	2,422	.21	539	3,308	6.14
	Big Sandy	N/A			N/A		
Hill & Blaine	Northern Mont.	7,914	21,222	.37	4,770	15,040	3.15
Liberty	Liberty County	264	1,844	.14	644	685	1.06
	Total	**43,799**	**158,245**	**.28**	**26,230**	**88,069**	**3.36**

1) Includes Emergency Visits

Table 2

Number of Inpatient & Outpatient Diagnostic Radiological Procedures Performed in North Central Montana Hospitals (1977)

County	Hospital	Inpatient Radiological Exams	Inpatient Patient Days	Inpatient Exam P. Days	Outpatient Radiological Exams	Outpatient Visits[1]	Outpatient Visits Exam
Beaverhead	Barrett Memorial	N/A			N/A		
Madison	Ruby Valley	351	1,811	.19	498	1,766	3.55
	Madison Valley	N/A			N/A		
Gallatin	Bozeman Deacon	11,024[2]					
Lewis & Clark and Jefferson	St. Peter's	10,466	34,713	.30	6,563	9,309	1.42
	Shodair Crippled Children's Hosp.	799	4,552	.18	876	12,604	14.39
Broadwater	Broadwater	N/A			N/A		
Meagher	Mountain View	N/A			N/A		
Silver Bow	St. James Comm.	7,324	39,721	.18	9,076	24,550	2.70
	Silver Bow Gen.	N/A			N/A		
Deer Lodge	Comm. Hosp. of Anaconda	2,304	8,514	.27	3,890	18,252	4.69
Powell	Powell Co.	862	5,373	.16	897	2,932	3.27
Granite	Granite Co. Mem.	98	813	.12	109	799	7.33
Park	Livingston Mem.	1,373	7,376	.19	1,049	11,441	10.91
	Total	**34,601**	**102,873**	**.33**	**22,958**	**81,653**	**3.56**

1) Includes Emergency Visits
2) Inpatient and Outpatient Exams Not Reported Separately

Table 3

Number of Inpatient & Outpatient Diagnostic Radiological Procedures Performed in Southwestern Montana Hospitals (1977)

County	Hospital	Inpatient Radiological Exams	Inpatient Patient Days	Inpatient Exam P. Days	Outpatient Radiological Exams	Outpatient Visits	Outpatient Visits Exam
Fergus, Petroleum & Judith Basin	Central Montana	2,374	8,099	.29	1,863	4,979	2.67
Wheatland & Golden Valley	Wheatland Mem.	406	2,037	.20	844	2,863	3.39
Musselshell	Roundup Mem.[2]						
Sweet Grass	Sweet Grass	148	1,320	.11	475	1,855	3.91
Stillwater	Stillwater Comm.	564	3,510	.16	423	1,655	3.91
Carbon	Carbon Co. Mem.	877	4,274	.21	452	1,971	4.36
Big Horn	Big Horn Co.	559	2,654	.21	356	1,546	4.34
Yellowstone	Billings Deacon.	6,164	56,038	.11	5,495	12,018	2.19
	St. Vincent	10,161[1]	64,872	.16	3,411	60,209	17.65
	Total	**21,253**	**142,804**	**.15**	**13,319**	**87,096**	**6.54**

1) Includes Emergency Visits
2) Closed During 1977
3) Statistics indicate the number of exposures

Table 4

Number of Inpatient & Outpatient Diagnostic Radiological Procedures Performed in South Central Montana Hospitals (1977).

County	Hospital	Inpatient Radiological Exams	Inpatient Patient Days	Exam P. Days	Outpatient Radiological Exams	Outpatient Visits[1]	Visits Exam
Valley	Frances Mahon Deaconess	1,345	7,692	.17	923	2,723	3.64
Daniels	Daniels Mem.	152	1,560	.10	328	982	2.99
Sheridan	Sheridan Mem.	821[2]					
Roosevelt	Roosevelt Mem.	507	2,826	.18	155	1,266	8.17
	Trinity	N/A			N/A		
	Poplar Com.	1,698[2]					
McCone	McCone County	454	3,260	.14	424	679	1.60
Garfield	Garfield County	95	466	.20	265	386	1.39
Richland	Community Mem.	3,266	12,021	.27	1,863	6,082	3.26
Dawson & Wibaux	Glendive Com.	1,562	10,199	.15	1,920	11,715	6.10
Rosebud & Treasure	Rosebud Com.						
Custer & Powder Riv.	Holy Rosary V.A. Hospital (Miles City)[2]	3,922	17,314	.23	780	4,047	5.19
Prairie	Prairie Com.	1,103	783	1.41	1,161	422	.36
Phillips	Malta Hospital	590	7,861	.08	350	2,074	5.93
Fallon	Fallon Mem.	281	1,092	.26	946	4,149	4.38
Carter	Dahl Memorial	N/A			392	1,238	3.16
	Total	**15,796**	**65,074**	**.24**	**9,507**	**35,763**	**3.76**

1) Includes Emergency Visits
2) Inpatient and Outpatient Exams Not Separated

SOURCE: Unpublished data from the 1977 Hospital Annual Reports, Montana State Department of Health & Environmental Sciences. Does not include examinations performed in the emergency room.

Table 5
Number of Inpatient & Outpatient Diagnostic Radiological Procedures Performed in Eastern Montana Hospitals (1977).

Nuclear Medicine
- Basic Gamma Camera $100,000
- Rectilinear Scanner 40,000

Ultrasound
- Simple System for Cardiac Studies ..... $ 20,000
- Compound B Scanner 60,000
- Real Time Unit 30,000
- Computer System 100,000

Xeromammography ..... $ 66,000*

In recent years, equipment used in these services has become most sophisticated and more costly. At the present time, diagnostic radiology, nuclear medicine and ultrasound have computerized systems available. At the same time, it appears that new applications are being developed in each of these areas.

In contrast, the utilization of xeromammography units has dropped considerably in recent months, apparently because of concern over radiation exposure. Research is being conducted into alternative ways of performing mammograms with little or no radiation.

2.0 Description of the Current Situation

2.1 Diagnostic Radiology

Tables 1 through 5 show the number of inpatient and outpatient radiological exams performed in Montana hospitals in 1977. As a rule of thumb, the American College of Radiology has suggested that facilities should plan general radiology workload requirements with the estimate of between 0.18 and 0.20 exams per bed occupancy day. Non-emergency, outpatient demands can be estimated at the rate of one examination per five or six outpatient visits.[1]

An examination of Tables 1 through 5 indicate most Montana hospitals seem to have inpatient ratios similar to those suggested by the American College of Radiology. The outpatient exams appear to be higher than the general rule of thumb. One possible explanation for this deviation is that outpatient visits in the small Montana hospitals are considerably different from those observed in large metropolitan areas. Most Montana hospitals do not have outpatient clinics such as are found in metropolitan areas. Instead they are used as an adjunct to the physician's offices where special services such as x-rays, physical therapy and laboratory services are available.

2.2 Nuclear Medicine

Figure 1 indicates those hospitals currently having either *in-vitro* (laboratory) or *in-vivo* (radiology) nuclear medicine capability. Table 6 shows the number of each type of exam performed by these facilities in 1977. No attempt has been made to interpret this data at this time and no attempt has been made to define the respective catchment areas of each facility.

It is noted that nuclear medicine facilities are monitored and regulated by the Nuclear Regulatory Commission and facilities need to obtain a license from them before they can handle radioactive materials.

* Includes the cost of a dedicated mammography X-ray machine. Most units are leased at a rate of $700/month. It costs $800/month for a contract which can be cancelled at any time.

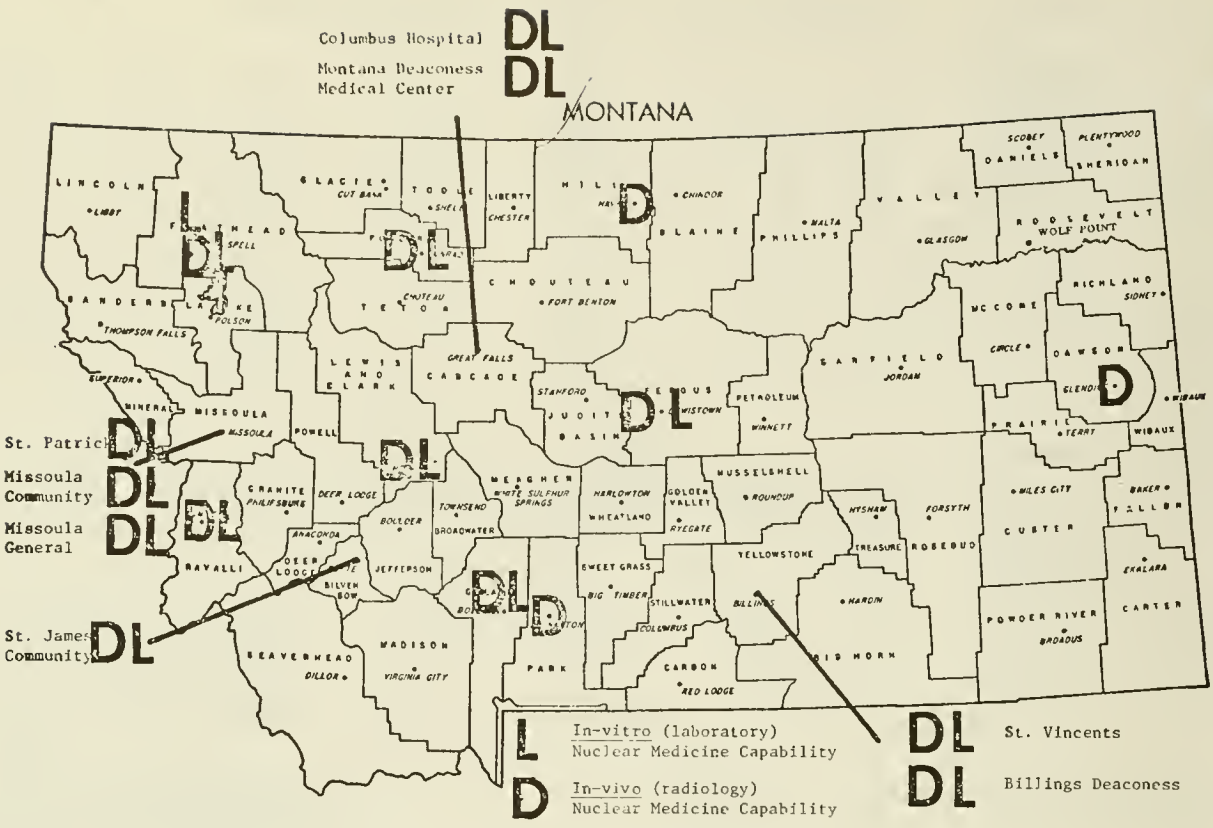


FIGURE 1 - Location of Hospitals in Montana with Nuclear Medicine Capabilities (1978)

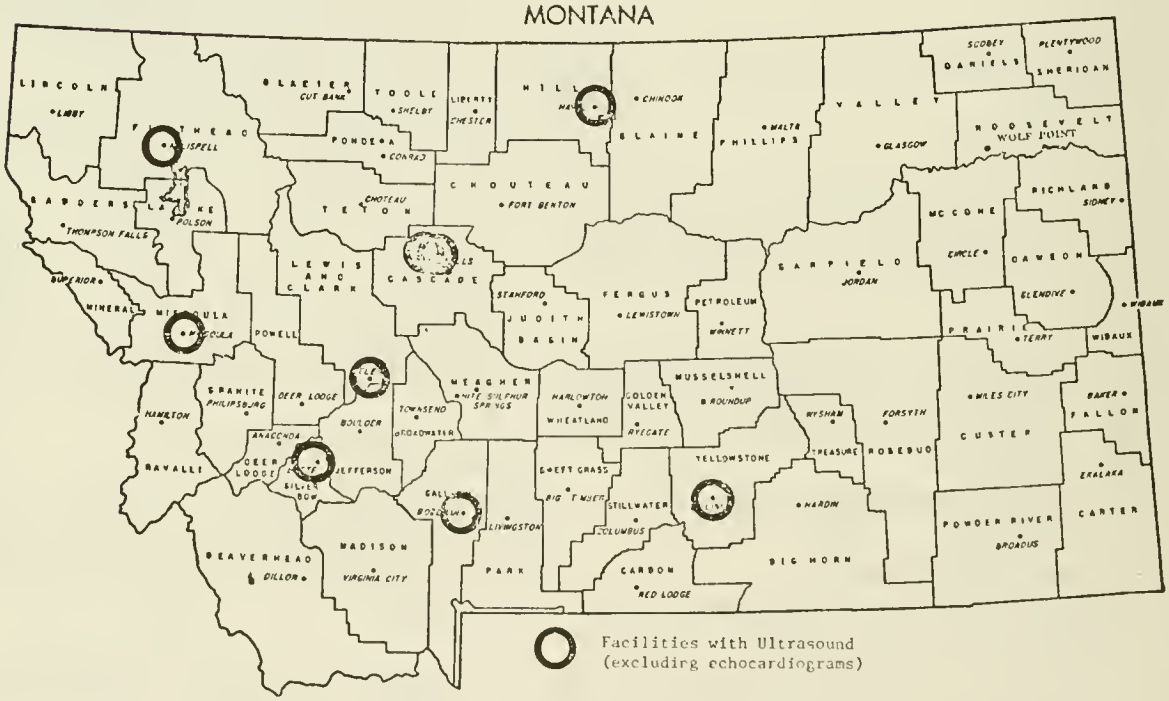


FIGURE 2 - Hospitals in Montana with Ultrasound Capability (1978)

2.3 Ultrasound

Figure 2 also shows those hospitals which currently possess ultrasound capabilities. These do not include facilities which perform echocardiograms (an ultrasonic procedure used in diagnosing heart disease). Table 7 also indicates the number of ultrasonic procedures performed by each facility in 1977. Again no attempt has been made to either interpret the numbers or define each facility's catchment area.

2.4 Xeromammography

It appears that most xeromammography units in Montana are found in private physician's offices and therefore are currently beyond the purview of the HSA. Two hospitals, Billings Deaconess and Columbus (Great Falls) have xeromammography units. The location of these units are displayed in Figure 3 and the number of procedures performed are shown in Table 8. Again, no attempt has been made to interpret the workloads or to define catchment areas.

3.0 Plan for the Future Development of Diagnostic Imaging Services

There are few guidelines and standards for diagnostic imaging services. The primary theme which should be emphasized is:

- financial feasibility (i.e. potential for generating more revenue than operating costs)
- minimizing duplication of these services in any one community, and
- some assurance of an adequate workload so that the professionals providing the service remain proficient.

Unfortunately, there are no standards for these concepts. Crude estimates have been developed by the Hospital Survey Committee (Philadelphia) to estimate the number of diagnostic x-ray rooms needed based on the number of procedures performed per day.[2] These are:

Procedures Per Day	Number of Rooms Needed*
20 or less	1
21 - 45	2
46 - 70	3
71 - 105	4
106 - 135	5
136 - 162	6
163 - 189	7
190 - 216	8
217 - 243	9

* It is recognized that a small rural hospital with one basic fluoroscopic/radiographic machine may necessitate a back-up machine in the event of equipment malfunction.

One study has suggested that a population base of between 50,000 and 70,000 people is needed to support a single nuclear medicine facility.[3] Another study has indicated hospitals of the size found in Montana are likely to perform less than 2,400 nuclear medicine (in-vivo and in-vitro, combined) procedures annually.[4] However, because a great number of modifications in Nuclear Medicine Departments is possible, simple standards cannot be stated.

Similarly, no estimates of the number of ultrasound procedures or xeromammography exams required to break even is available.

3.2 Estimate of Service Need

Estimating the need for the various types of diagnostic imaging services in Montana appears to be beyond the current state of the art and therefore no levels of service can be recommended.

Table 6 - Number of Nuclear Medicine Procedures Performed, by Type, in Montana Hospitals (1977).

Subarea & Facility	Number of Nuclear Medicine Procedures Performed (1977) In-Vivo (Diagnostic Imaging)	In-Vitro (Laboratory)	Total
Northwestern			
Kalispell Regional Hosp. (Kalispell)	N/A	N/A	589
North Valley Hospital (Whitefish)	-	400	400
Missoula General Hospital (Missoula)	214	1,080	1,294
Missoula Comm. Hosp. (Missoula)	274	-	274
St. Patrick Hospital (Missoula)	1,037	-	1,037
Marcus Daly Hosp. (Hamilton)	20	-	20
North Central			
Pondera Co. Hosp. (Conrad)	394	940	1,334
Mont. Dea. Med. Ctr (Great Falls)	1,604	1,984	3,593
Columbus Hospital (Great Falls)	1,482	2,179	3,661
Northern Mont. Hosp. (Havre)	632	-	632
Southwestern			
St. James Com. Hosp. (Butte)	2,162	2,347	4,509
Livingston Mem. Hosp (Livingston)	18	-	18
St. Peter's Hospital (Helena)	1,193	1,606	3,992
Bozeman Dea. Hosp. (Bozeman)	640	7,850	8,490
South Central			
Cent. Montana Hosp. (Lewistown)	202	505	707
Billings Dea. Hosp. (Billings)	2,000	6,600	8,600
St. Vincent Hosp. (Billings)	1,480	4,357	5,837
Eastern			
Glendive Com. Hosp. (Glendive)	67	0	67

1) Thyroid levels only
2) Services started May, 1978.
3) In addition, 8,866 multichem tests which contain T3 tests were performed
4) For the period between November 22, 1977 and December 31, 1977
5) T3's and T4's levels only

Table 7 - Number of Ultrasound Procedures (excluding echocardiograms) Performed in Montana Hospitals (1977).

Subarea & Facility	Number of Ultrasound Procedures Performed (1977)
Northwestern	
Missoula Community Hospital (Missoula)	552
Kalispell Regional Hospital (Kalispell)	97
North Central	
Montana Deaconess Medical Center (Gt. Falls)	983
Columbus Hospital (Great Falls)	N/A
Northern Montana Hospital (Havre)	245
Southwestern	
St. James Community Hospital (Butte)	330
Bozeman Deaconess Hospital (Bozeman)	180 (est.)[3]
St. Peter's Hospital (Helena)	279
South Central	
St. Vincent Hospital (Billings)	1,036

1) Reflects Utilization from September through December, 1977.
2) Service initiated September 1, 1977. Data not available
3) Service initiated September, 1977 estimate based upon an average of three procedures/day

Table 8

Number of Xeromammograms Performed in Montana Facilities (1977).

Subarea & Facility	Type of Facility	Number of Xeromammograms Performed (1977)
Northwestern		
Western Montana Clinic (Missoula)	Physicians' Ofc.	220-300
North Central		
Columbus Hospital (Great Falls)	Hospital	384
Southwestern		
Butte Radiological Associates (Butte)	Physicians' Ofc.	700[1]
Helena Radiological Associates PSC (Hln.)	Physicians' Ofc.	
South Central		
Eastern Radiological Associates (Billings)	Physicians' Ofc.	1,200 (est.)[2]
Billings Deaconess (Billings)	Hospital	307

1) Excluding specimen mammograms.
2) Based on an average of 5-6 per week, estimated by Andrew McKane, M.D.
3) Estimated by J.M. Driscoll, M.D.
4) Estimated by Virgil Walker, R.T.

Source: Unpublished data from an HSA Survey (Aug., 1978).

REFERENCES

1) Brogdon, B. G. and W. J. Tuddenham, "Department Planning: Fundamental Considerations for Diagnostic Radiology" in **Planning Guide for Radiological Installations, Fascicle 4; Basic Concepts,** prepared under the auspices of the Committee on Department Planning, Commission on Radiologic Equipment and Facilities, American College of Radiology, 1977.
2) Hospital Survey Committee, **Cost Containment and Financing of Hospital Construction,** Philadelphia, 1974.
3) Orkand Corporations, **Guidelines for Nuclear Medicine Services,** 1976.
4) Siemsem, J. K., et al, **Report of Committee on Nuclear Medicine Departmental Facilities to the American College of Nuclear Physicians,** May, 1976.

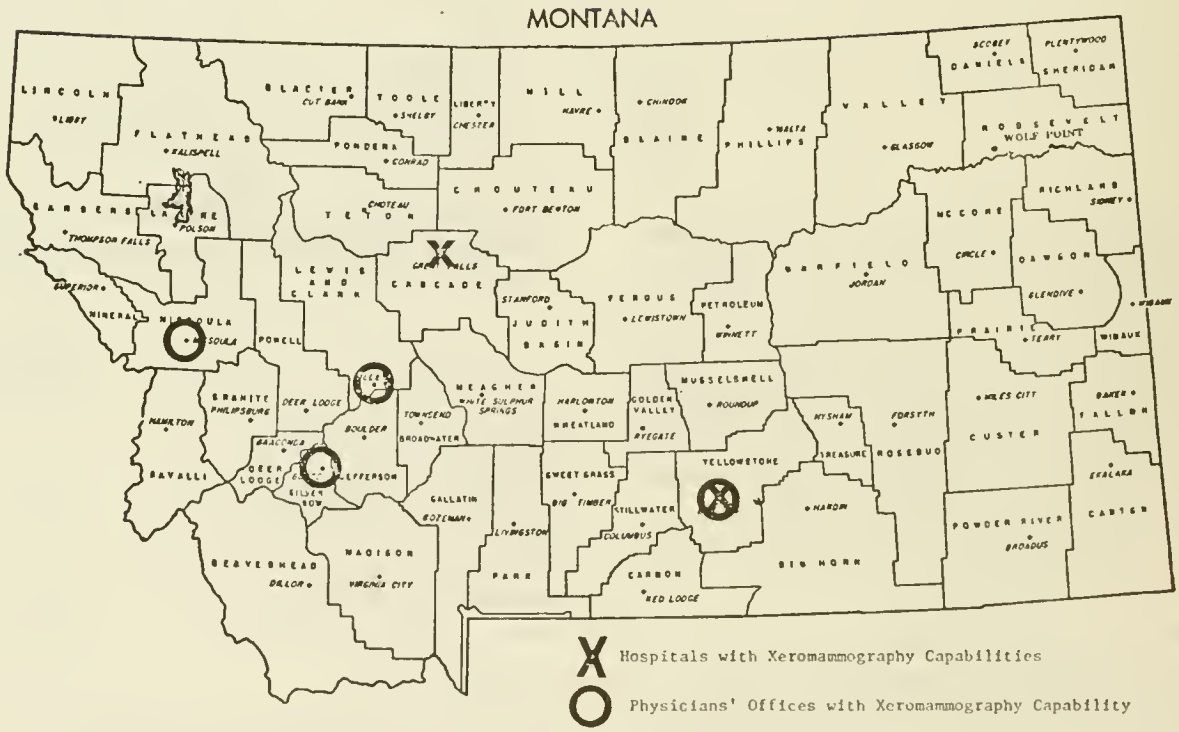


FIGURE 3 - Location of Xeromammography Units in Montana (1978)

4.5
SUMMARY
LONG TERM CARE FACILITIES

This component addresses those long term care beds medically necessary for health maintenance, providing inpatient care for the elderly, the convalescing, and chronic disease patients.

Although no data is available, there currently appears to be a shortage of personal care homes, group homes, adult foster care centers and geriatric day care centers. If these facilities are built and become operational, less demand for long term beds should be in evidence.

Using the classical Hill-Burton formula, with minor modifications, it appears that four service areas need 70 or more additional long term care beds by 1985. They are: Cascade (70 beds), Yellowstone (237 beds), Lewis and Clark County (85 beds), and Flathead County (113 beds).

With 5 counties presently having a surplus of over 20 long term care beds, and with the statewide ratio of 76.3 beds per 1,000 elderly population, the MHSA would encourage the development of alternatives to long term care facilities, implementation of the swing bed concept and more appropriate placement practices for the long term care resident.

By 1980 a coordinated effort should be in evidence between the MHSA and other groups affiliated with the aged for the improved identification of problems facing the elderly.

LONG TERM CARE FACILITIES

Goals:

1) Long-term care beds should be readily and locally available to residents needing this type of care to avoid any excessive travel time to a facility and to avoid any psychological adjustments necessary by residents who otherwise would have to live far away from home. Future facilities should be designed to maintain at least a 90 percent annual average occupancy rate.

2) The appropriate placement of long-term care residents in nursing homes is to be encouraged.

Objectives:

1) By 1985, the following counties should consider constructing new or expanding existing long-term care facilities:

   - Cascade
   - Yellowstone
   - Lewis & Clark
   - Flathead
   - Custer
   - Hill
   - Gallatin
   - Ravalli
   - Glacier
   - Richland

   However, no new facility construction should be approved until the applicant verifies that he fully investigated the feasibility of alternative modes for care.

2) By 1982 the various sources of federal funds to assist in the financing of retirement homes, group homes and other less restrictive living arrangements should be identified. Programs providing seed money for the establishment of adult foster care programs, geriatric day care centers and home health care agencies should be identified and solicited. In addition, the MHSA should work toward a more stable reimbursement framework for these alternatives.

3) By 1980, efforts should be coordinated between the MHSA and other groups affiliated with the aged to identify the specific health problems of the elderly and the programs that could be implemented to alleviate these problems.

Recommended Review Criteria

Some of the following guidelines are covered by state licensing and reimbursement regulations and must be complied with in order to operate a long-term care facility in Montana. They are restated in this document to emphasize the MHSA's concern in specific areas.

1) Proposed construction, expansion and modernization plans must be compatible with the estimated bed need of the service area.

2) Possible alternative methods of providing long-term care should be fully explored by any facility proposing construction and/or expansion.

3) Adequate capital should be available to cover the cost of operating the proposed project. The applicant's expectations regarding the "mix" of the anticipated population by source of payment (i.e. Medicare, Medicaid, Third Party and Private Pay) should be consistent with either the current experience of existing facilities in the area offering similar services or the past experience of the applicant.

4) The individual components of the total project cost should be reasonable and legitimate expenditures. If the applicant intends to lease, rather than purchase the facility, the applicant must document (1) why leasing is preferred, and (2) the overall difference in cost between leasing and purchasing.

5) All parties and interests having 10 percent or more interest in the project should be clearly identified, and all contractual arrangements for goods and services should be fully documented. All professional fees which are included as part of the total project cost should be explained and justified.

6) The director of nursing should be well qualified to fulfill his or her responsibilities in administering the provision of nursing services. Any proposed project should be staffed by an adequate number of appropriately trained nursing personnel. For skilled nursing facilities, minimum staffing levels by number of beds have been established by the State.

7) Residents' rights should be defined in writing, and appropriate steps should be taken to ensure that all staff, owners or operators and residents are aware of, understand, and comply with these rights.

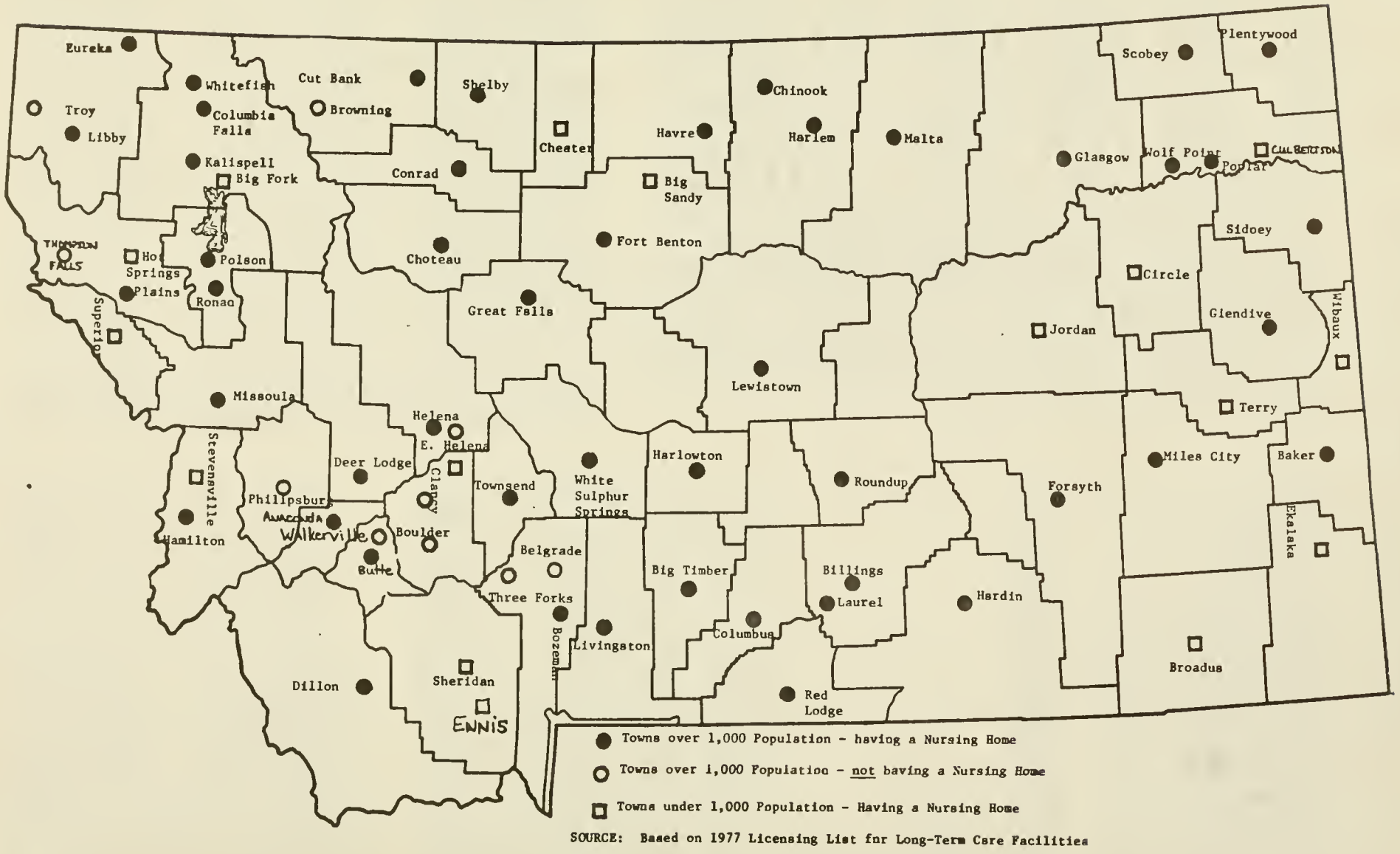
8) In rural, sparsely populated communities with bed needs of less than 40, the development of combination hospital/long-term care facilities should be encouraged where there is clear evidence of need. Also, if proven to be cost effective, services such as dietary or laundry should be shared between the hospital and long-term care facility.

1.0 Background

Long-term care involves the provision of those services, physical, psychological, spiritual, social, and economic needs to help people maintain and eventually regain, if possible, an optimal level of functioning. This component will address those long-term care beds medically necessary for health maintenance throughout life as well as care during acute protracted illness and disability. Defined in this way, long-term care facilities provide inpatient care for the elderly, the convalescing, and chronic disease patients who require professional nursing care and related medical services.

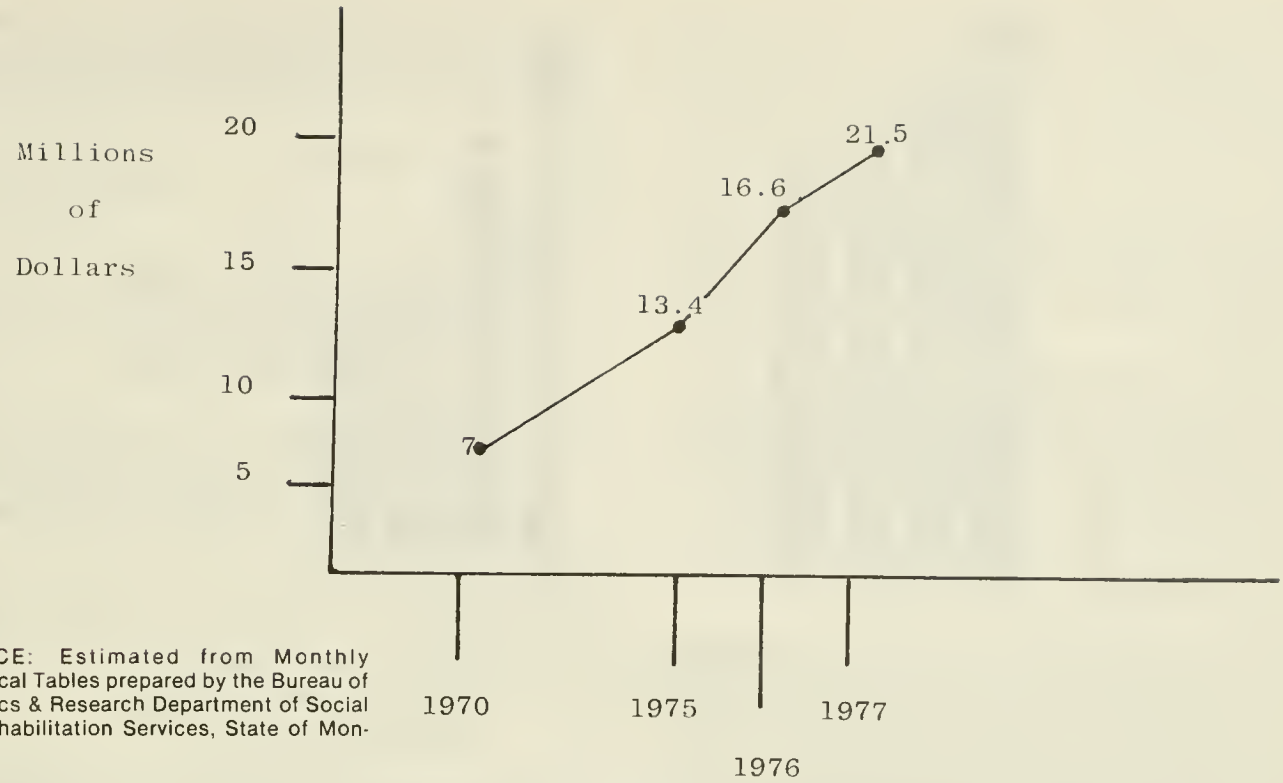
By addressing only those "medically necessary" beds, the MHSA is assuming that the most appropriate model for long-term care is the medical model. This does not appear to be entirely true. The state has recognized that the residents of these facilities need psycho-social services as well as medical services. Consequently, there are a number of regulations which require long-term facilities to provide these services. Because the psycho-social needs are so difficult to determine and measure, the medical model was used.

Currently, there are four levels of long-term care nursing beds licensed in Montana, skilled, intermediate A and B, and intermediate care for the mentally retarded (ICFMR). Skilled nursing beds offer continuous skilled nursing care twenty-four hours per day. Intermediate A and B care beds only provide for limited skilled nursing services in addition to personal care. Intermediate B beds have been phased out in Montana and no new intermediate B beds are being li-



SOURCE: Based on 1977 Licensing List for Long-Term Care Facilities

FIGURE 1 - Location of Long Term Care Facilities in Montana



SOURCE: Estimated from Monthly Statistical Tables prepared by the Bureau of Statistics & Research Department of Social and Rehabilitation Services, State of Montana.

Figure 2
Montana Medicaid's Annual Expenditures for Long Term Care Services for Selected Years.

censed. Under intermediate care for mental retardation facilities, group homes could be licensed to provide this service.

Concise definitions for distinguishing between skilled and intermediate care beds are not available. The Montana Foundation for Medical Care uses Medicare definitions to classify residents of long-term care facilities. In addressing the future need for long-term care beds in Montana, these guidelines do not make separate estimates for skilled and intermediate beds. To be compatible with licensing requirements, it is suggested that facilities allocate their beds in initial applications and base their analysis of financial feasibility on this allocation. After the review is conducted and the license is awarded, the allocation will be fixed. Any changes in the allocation of beds in operating facilities will continue to be subject to review.

Long-term care facilities operated by state and federal governments are not addressed in this component. These facilities are not subject to the same regulations, have restricted admission policies, and do not serve just the local communities in which they are located. Included are the Montana Veterans' Home in Columbia Falls, the Montana Center for the Aged in Lewistown, the Eastmont Human Services Center in Glendive, and the Veterans Administration Hospital in Miles City.

2.0 Description of Current Situation

2.1 Incidence and Prevalence

The population group primarily served by long-term care facilities in Montana is comprised of individuals 65 years of age or older. Patient origin studies conducted by the Comprehensive Health Planning (CHP) agencies in 1974 indicate that the average age of nursing home residents was between 79 and 81 years old. The average length of stay for nursing home patients was reported to be between 1.9 and 2.8 years.

The number of persons aged 65 years and older is projected to increase 15 percent from 1975 to 1985 as compared to only a 12 percent increase for the entire population of Montana for this period. The Department of Community Affairs estimates that there were approximately 75,586 persons in 1975 aged 65 years and older. By 1985, the number of elderly is expected to reach 86,645.

2.2 Current Inventory and Utilization Levels

The geographical distribution of long-term care facilities is illustrated in Figure 1. Of the 58 cities and towns with populations of 1,000 or more, 48 have nursing homes. In addition, there are 15 towns with populations of less than 1,000 which also have a long-term care facility.

In 1973, the United States had 51.9 long-term care beds per 1,000 persons aged 65 years and older. In Montana, there were 56.0 long-term care beds per 1,000 elderly.[1] By 1976, this ratio had increased to 67.4 beds per 1,000 elderly. In 1978, there were 76.3 beds per 1000 elderly in Montana.

Although there are no national standards for the number of long-term care beds needed to serve a population of a given size, a number of states have specified target ratios. Texas, for example, is using 80 beds per 1,000 elderly population,while Massachusetts is using 63.8 beds per 1,000 elderly. Massachusetts has established 25.8 boarding home beds per 1,000 elderly as well.[2,3]

The average size of nursing homes in Montana is relatively small, 63 beds. Ries and Christenson have pointed out that larger facilities would be more economical to operate in Montana.[4] For example, they have indicated that the most economical size for long-term care facilities in Montana would be 122 beds. On the other hand, geography and the small population densities characteristic to Montana dictate that small facilities be built if they are to be accessible.

Figures 2 and 3 show the total operating costs of community long-term care facilities in Montana for the years 1975-1978. The total costs in this period rose 115 percent from $21.2 million to $45.6 million. At the same time, the cost per patient day rose 40 percent (from $17.60 in 1975 to $24.68 in 1978). Medicaid pays for approximately 55 percent of these costs.

Tables 1 through 5 show 1978 utilization statistics for each facility by subarea. Because little construction has taken place in the last two years, it appears that almost all facilities are continually full. The average 1978 occupancy rate for all facilities in three of the five subareas is in excess of 90 percent.

The impact of the Professional Standards Review Organization's (PSRO) utilization review is evidenced in the proportion of patients who are classified as skilled nursing patients on the last day of the survey. In previous years a majority of patients were "skilled", now the proportion is between 20 and 40 percent.

Additional patient origin and cost data for each facility and subarea are presented in Appendices B and C.

The majority of long-term care facilities in Montana are operated by proprietary (for profit) organizations. However, there are a number of nursing homes, around 30 percent, which are operated in conjunction with hospitals. Most of these are small facilities with an average long-term bed complement of 38. Combination facilities appear to be one viable method of delivering both acute and long-term care services to rural areas.

In recent years, many small hospitals have developed combination facilities. In this configuration, the hospital and long-term care facility are run separately, but have a common administrator and share some support services such as dietary and laundry. Proposed Federal Amendments to the Social Security Act, if passed, will allow usage of the swing bed concept in which long-term care and acute care beds can be used interchangeably as needed. At the present time, Medicare and Medicaid reimbursement policies require that these facilities be operated separately. In sparsely populated rural areas, it appears that combination facilities are a reasonable way to economically provide both acute and long-term care services. It also appears that future dependence on this concept might increase the costs of long-term care.

3.0 Estimated Future Resource Requirements

In estimating the future need for long-term care facilities in Montana, the Hill-Burton model based on past utilization of existing facilities and population growth in the immediate county is used. It assumed that the primary service area for a long-term care facility is the county in which the facility is located. This assumption is supported by patient origin studies conducted by the Comprehensive Health Planning Agencies in 1974. These studies demonstrated that a majority of the facilities served the local communities in which they were located. Recent data shows that this practice is continuing today. Approximately 80 percent of the long-term care admissions in Montana nursing homes during 1977 originated from the county where the facility is located.

Population estimates and projections used in applying the model are taken from those prepared by the Department of Community Affairs. In all cases, the estimates are for those persons aged 65 and older.

The estimated number of long-term care beds needed in 1985 in each county (service area) and subarea are shown in Tables 6 through 10. The Hill-Burton Formula used to make these estimates is expressed by the following formula:

$$\text{Beds needed} = \frac{PD \times Pop(85)}{Pop(76) \times 365 \times 0.90}$$

where
PD = number of patient days observed in 1976
Pop (76) = estimated 1976 population who are 65 and over for the service area.
Pop (85) = estimated 1985 population who are 65 and over for the service area.

The factor 0.90 corresponds to a desired overall occupancy rate. It appears that 90 percent occupancy rate is both feasible and desirable. Facilities continually operating at less than this level lose administrative flexibility and have difficulties remaining solvent.

Based on the estimates in Tables 6 through 10, the following service areas appear to need 70 or more long-term care beds by 1985.

- Cascade County (70 beds)
- Yellowstone County (237 beds)
- Lewis & Clark County (85 beds)
- Flathead County (113 beds)

It appears that 40 beds is the smallest size that independent long-term care facilities can be and still be financially viable. However, before any additional construction of long-term care facilities is approved, it is recommended that the availability of alternative sources of care be carefully investigated.

Alternatives to long-term care as addressed in this component include retirement homes, senior citizen apartments, personal care homes, group homes, adult foster care programs, geriatric day care centers and home health care agencies. These less restrictive types of health care programs should be developed to the maximum extent where possible.

Other areas where at least twenty additional beds may be required include:

- Custer County (55 beds)
- Hill County (40 beds)
- Gallatin County (45 beds)
- Ravalli County (33 beds)
- Glacier County (29 beds)
- Richland County (30 beds)

If applications are generated for additional long-term care beds for these areas, they probably will involve expanding or augmenting existing facilities. It is unlikely that independent facilities of these sizes could be viable units in the long run. Again, alternative types of care should be explored before any application is approved.

Those counties which had previously shown a surplus of beds are now indicating that many of those beds are being used. The MHSA is not recommending at this time that any facility be closed or reduced in capacity because they have an excess of available long-term care beds.

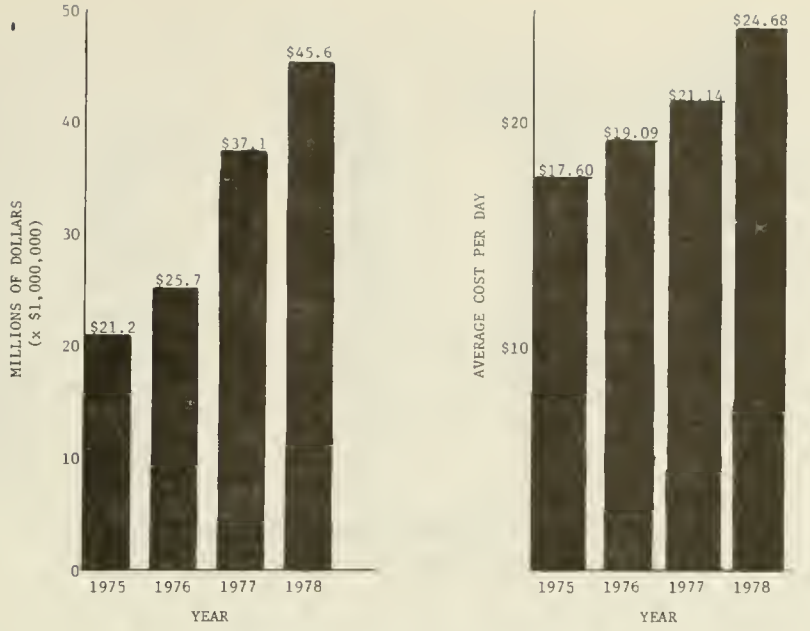


Figure 3 - Total Operating Expenses
And the Average Cost Per Day of
The Nursing Home Industry in Montana
(1975-1978)

COUNTY	FACILITY NAME	CITY	BEDS	# ADM	# PAT DAYS	AVER OCC RATE (%)	% SKILL PAT
FLATHEAD	BIGFORK CONVALESCENT CENTER	BIGFORK	83	72	28649	94.6	33.3
	FLATHEAD COUNTY NURSING HOME	KALISPELL	66	47	23505	97.6	31.3
	IMMANUEL LUTHERAN HOME	KALISPELL	139	94	49788	98 1	36.0
	COLONIAL MANOR NURSING HOME	WHITEFISH	60	55	19309	88 2	0.0
	NORTH VALLEY HOSPITAL & EXTENDED	WHITEFISH	56	110	19588	95.8	72.7
LAKE	ST. JOSEPH CONVALESCENT CENTER	POLSON	112	129	38635	94.5	11.1
	HAPPY ACRES HOME	RONAN	10	3	3546	97.2	0.0
	WESTSIDE REST HOME	RONAN	23	6	8359	99 6	0.0
LINCOLN	LIBBY CONVALESCENT CENTER	LIBBY	63	41	22385	97.3	23.6
	MOUNTAINVIEW MANOR NURSING HOME	EUREKA	40	43	4417	30.3	5.3
MINERAL	MINERAL COUNTY HOSPITAL	SUPERIOR	20	10	7264	99.5	10.0
MISSOULA	COMMUNITY NURSING HOME	MISSOULA	62	143	20832	92.1	56.9
	HILLSIDE MANOR	MISSOULA	107	141	34530	88.4	100.0
	ROYAL MANOR NURSING HOME	MISSOULA	51	39	17785	95.5	60.8
	WAYSIDE NURSING HOME	MISSOULA	44	59	15427	96.1	51.2
RAVALLI	VALLEY VIEW ESTATES NURSING HOME	HAMILTON	98	56	34864	97.5	14.6
	NORTH VALLEY NURSING HOME	STEVENSVILLE	57	34	20684	99 4	10.7
SANDERS	HOT SPRINGS CONVALESCENT	HOT SPRINGS	72	36	21539	82 0	63.9
	CLARK FORK VALLEY HOSPITAL NURSING	PLAINS	12	11	4309	98 4	50.0
SUBAREA TOTAL			1175	1129	395415	92.20	37.58

Table 1 - 1978 Utilization Statistics
For Long-Term Care Facilities in Northwestern Montana

COUNTY	FACILITY NAME	CITY	BEDS	# ADM	# PAT DAYS	AVER OCC RATE (%)	% SKILL PAT
BLAINE	SWEET MEMORIAL NURSING HOME	CHINOOK	40	27	13160	90.1	10.0
	HARLEM REST HOME	HARLEM	67	32	20718	84 7	0.0
CASCADE	CASCADE COUNTY CONVALESCENT NURSING	GREAT FALLS	230	211	82330	98.1	33.0
	DEACONESS NURSING HOME	GREAT FALLS	90	137	31288	95.2	100.0
	MCAULEY NURSING HOME	GREAT FALLS	42	19	15228	99.3	2.4
	PARK PLACE NURSING HOME & REHAB	GREAT FALLS	165	284	55865	92.8	38.0
CHOUTEAU	SANDE CONVALESCENT HOME	BIG SANDY	29	6	10331	97 6	0.0
	CHOUTEAU COUNTY DISTRICT HOSPITAL	FORT BENTON	22	17	7650	95.3	100.0
GLACIER	MEMORIAL HOSPITAL AND NURSING HOME	CUTBANK	39	39	13905	97 7	13.2
	BLACKFEET NURSING HOME	BROWNING	49	13	15486	86.6	19 4
HILL	HI-LINE HOME	HAVRE	18	10	6082	92.6	0.0
	LUTHERAN HOME OF THE GOOD SHEPHERD	HAVRE	102	75	36300	97 5	1.0
LIBERTY	LIBERTY COUNTY NURSING HOME	CHESTER	40	29	13511	92.5	36.1
TETON	TETON NURSING HOME	CHOTEAU	41	9	14950	99 9	86.8
	TETON MEDICAL CENTER-NURSING HOME	CHOTEAU	24	55	5371	61 3	21.1
TOOLE	TOOLE COUNTY HOSPITAL & NURSING HOME	SHELBY	32	25	11396	97 6	6.3
SUBAREA TOTAL			1030	988	353571	94 05	32 20

Table 2 - 1978 Utilization Statistics
For Long-Term Care Facilities in North Central Montana

COUNTY	FACILITY NAME	CITY	BEDS	# ADM	# PAT DAYS	AVER OCC RATE (%)	% SKILL PAT
BEAVERHEAD	PARKVIEW ACRES CONVALESCENT CENTER	DILLON	108	48	11215	28.5	31.7
BROADWATER	BROADWATER COUNTY REST HOME	TOWNSEND	18	16	5852	89.1	0.0
DEERLODGE	COMMUNITY NURSING HOME OF ANACONDA	ANACONDA	68	58	24297	97.9	0.0
GALLATIN	BOZEMAN CONVALESCENT CENTER	BOZEMAN	103	100	30018	79.8	52.5
	BOZEMAN DEACONESS HOSPITAL	BOZEMAN	60	82	21437	97.9	50.0
	GALLATIN COUNTY REST HOME	BOZEMAN	56	20	19234	94.1	13.2
	HILLCREST HEALTH CENTER	BOZEMAN	8	19	2746	94.0	0.0
JEFFERSON	HILLBROOK NURSING HOME	CLANCY	67	58	23943	97.9	7.8
LEWIS AND CLARK	COONEY CONVALESCENT HOME	HELENA	60	109	20516	93.7	24.1
	HELENA NURSING HOME & HEALTH FACILITY	HELENA	63	34	10373	45.1	3.6
	PARKSIDE MANOR	HELENA	52	33	18973	100.0	0.0
	WESTERN CARE	HELENA	108	64	38013	96.4	5.9
MADISON	MADISON COUNTY NURSING HOME	SHERIDAN	39	11	14071	98.8	0.0
MEAGHER	MOUNTAINVIEW MEMORIAL NURSING HOME	WHITE SULPHUR	11	16	5186	129.2	100.0
PARK	LIVINGSTON CONVALESCENT CENTER	LIVINGSTON	125	104	37746	82.7	49.0
POWELL	COLONIAL MANOR OF DEER LODGE	DEER LODGE	60	19	20978	95.8	37.0
SILVER BOW	BUTTE PARK ROYAL CONVALESCENT CENTER	BUTTE	200	318	63464	86.9	12.1
	CREST NURSING HOME	BUTTE	103	123	34691	92.3	25.3
	SILVER BOW GENERAL HOSPITAL	BUTTE	100	102	35497	97.3	52.1
SUBAREA TOTAL			1409	1334	438250	85.22	26.72

Table 3 - 1978 Utilization Statistics
For Long-Term Care Facilities in Southwestern Montana

COUNTY	FACILITY NAME	CITY	BEDS	# ADM	# PAT DAYS	AVER OCC RATE (%)	% SKILL PAT
BIG HORN	BIG HORN COUNTY MEMORIAL HOSPITAL	HARDIN	34	50	11721	94.4	100.0
	MOUNTAIN VIEW REST HAVEN	HARDIN	21	10	6362	83.0	0.0
CARBON	CARBON COUNTY HEALTH CARE CENTER	RED LODGE	80	63	21819	74.7	13.6
	CARBON COUNTY MEMORIAL NURSING HOME	RED LODGE	24	43	6348	72.5	100.0
FERGUS	CENTRAL MONTANA HOSPITAL-NURSING	LEWISTOWN	70	91	17538	68.6	5.1
	VALLE VISTA MANOR	LEWISTOWN	97	47	33973	96.0	12.5
MUSSELSHELL	ROUNDUP MEMORIAL NURSING HOME	ROUNDUP	18	6	6365	96.9	50.0
PONDERA	PONDERA PIONEER NURSING HOME	CONRAD	63	88	22260	96.8	44.4
STILLWATER	STILLWATER CONVALESCENT CENTER	COLUMBUS	81	71	28482	96.3	30.3
SWEET GRASS	PIONEER NURSING HOME	BIG TIMBER	48	21	17335	98.9	27.7
WHEATLAND	WHEATLAND MEMORIAL NURSING HOME	HARLOWTON	33	20	11775	97.8	31.3
YELLOWSTONE	GLENDEEN NURSING HOME	BILLINGS	36	26	6953	52.9	100.0
	ST. JOHN'S LUTHERAN NURSING HOME	BILLINGS	176	150	61762	96.1	48.3
	VALLEY NURSING HOME	BILLINGS	100	118	35221	96.5	44.3
	WESTERN MANOR NURSING HOME	BILLINGS	158	238	56120	97.3	70.1
	YELLOWSTONE COUNTY NURSING HOME	BILLINGS	58	49	20812	98.3	12.3
	LAUREL NURSING HOME	LAUREL	29	7	10071	95.1	100.0
SUBAREA TOTAL			1126	1098	374917	91.22	43.80

Table 4 - 1978 Utilization Statistics
For Long-Term Care Facilities in South Central Montana

COUNTY	FACILITY NAME	CITY	BEDS	# ADM	# PAT DAYS	AVER OCC RATE (%)	% SKILL PAT
CARTER	DAHL MEMORIAL NURSING HOME	EKALAKA	21	28	5739	74.9	100.0
CUSTER	CUSTER COUNTY REST HOME	MILES CITY	121	57	43048	97.5	6.7
	FRIENDSHIP VILLA OF MILES CITY	MILES CITY	67	67	23576	96.4	7.5
DANIELS	DANIELS MEMORIAL NURSING HOME	SCOBEY	55	43	15849	78.9	2.6
DAWSON	GLENDIVE COMMUNITY NURSING HOME	GLENDIVE	75	50	26193	95.7	31.3
FALLON	FALLON MEMORIAL NURSING HOME	BAKER	32	23	10389	88.9	33.3
GARFIELD	GARFIELD COUNTY HOME AND HOSPITAL	JORDAN	12	8	2229	50.9	28.6
MC CONE	MCCONE COUNTY NURSING HOME	CIRCLE	40	34	5535	37.9	12.5
PHILLIPS	MALTA NURSING HOME	MALTA	35	13	11567	90.5	0.0
POWDER RIVER	POWDER RIVER NURSING HOME	BROADUS	40	37	3548	24.3	0.0
PRAIRIE	PRAIRIE COMMUNITY NURSING HOME	TERRY	14	6	4354	85.2	38.5
RICHLAND	RICHLAND HOMES	SIDNEY	85	22	29515	95.1	30.8
ROOSEVELT	COMMUNITY HOSPITAL NURSING HOME	POPLAR	22	29	7379	91.9	45.0
	FAITH LUTHERAN HOME	WOLF POINT	60	23	20969	95.7	0.0
	ROOSEVELT MEMORIAL NURSING HOME	CULBERTSON	40	6	72	0.5	0.0
ROSEBUD	ROSEBUD COMMUNITY NURSING HOME	FORSYTH	47	33	15134	88.2	12.8
SHERIDAN	SHERIDAN MEMORIAL HOSPITAL	PLENTYWOOD	37	22	13434	99.5	73.0
VALLEY	VALLEY VIEW NURSING HOME	GLASGOW	92	28	31591	94.1	21.1
	FRANCES MAHON DEACONESS HOSPITAL	GLASGOW	6	24	578	26.4	100.0
WIBAUX	WIBAUX COUNTY NURSING HOME	WIBAUX	40	65	12796	87.6	16.7
SUBAREA TOTAL			941	618	284495	82.54	20.43

Table 5 - 1978 Utilization Statistics
For Long-Term Care Facilities in Eastern Montana

SUBAREA, LTC FACILITY & CITY		# PAT DAYS (1978)	ADJUSTED DAILY CENSUS (1978)	ESTIMATED BED NEED (1985)	LICENSED BEDS (1978)	DEFICIT (+) SURPLUS (−)
NORTHWESTERN						
BIGFORK CONVALESCENT CENTER	BIGFORK	28649	88.8	99	83	16
FLATHEAD COUNTY NURSING HOME	KALISPELL	23505	78.8	88	66	22
IMMANUEL LUTHERAN HOME	KALISPELL	49788	166 9	185	139	46
COLONIAL MANOR NURSING HOME	WHITEFISH	19309	64.7	72	60	12
NORTH VALLEY HOSPITAL & EXTENDED	WHITEFISH	19588	65 7	73	56	17
ST JOSEPH CONVALESCENT CENTER	POLSON	38635	113.9	127	112	15
HAPPY ACRES HOME	RONAN	3546	10.5	12	10	2
WESTSIDE REST HOME	RONAN	8359	24 6	27	23	4
LIBBY CONVALESCENT CENTER	LIBBY	22385	83 6	93	63	30
MINERAL COUNTY HOSPITAL	SUPERIOR	7264	22 9	25	20	5
COMMUNITY NURSING HOME	MISSOULA	20832	70 6	78	62	16
HILLSIDE MANOR	MISSOULA	34530	117.0	130	107	23
ROYAL MANOR NURSING HOME	MISSOULA	17785	60.3	67	51	16
WAYSIDE NURSING HOME	MISSOULA	15427	52.3	58	44	14
MOUNTAIN VIEW MANOR NURSING HOME	EUREKA	4417	12.7	14	40	- 26
VALLEY VIEW ESTATES NURSING HOME	HAMILTON	34864	106.2	118	98	20
NORTH VALLEY NURSING HOME	STEVENSVILLE	20684	63.0	70	57	13
HOT SPRINGS CONVALESCENT	HOT SPRINGS	21539	63.6	71	72	- 1
CLARK FORK VALLEY HOSPITAL NURSING	PLAINS	4309	12.7	14	12	2
SUBAREA TOTAL		395415	1278.8	1421	1175	246

Table 6 - Estimated Long-Term Care (LTC) Bed Need In Northwestern Montana in 1985

SUBAREA, LTC FACILITY & CITY		# PAT DAYS (1978)	ADJUSTED DAILY CENSUS (1985)	ESTIMATED BED NEED (1985)	LICENSED BEDS (1978)	DEFICIT (+) SURPLUS (−)
NORTH CENTRAL						
SWEET MEMORIAL NURSING HOME	CHINOOK	13160	35.0	39	40	- 1
HARLEM REST HOME	HARLEM	20718	55.0	61	67	- 6
CASCADE COUNTY CONVALESCENT NURSING	GREAT FALLS	82330	239 6	266	230	36
DEACONESS NURSING HOME	GREAT FALLS	31288	91.1	101	90	11
MCAULEY NURSING HOME	GREAT FALLS	15228	44.3	49	42	7
PARK PLACE NURSING HOME & REHAB	GREAT FALLS	55865	162.6	181	165	16
SANDE CONVALESCENT HOME	BIG SANDY	10331	29.0	32	29	3
CHOUTEAU COUNTY DISTRICT HOSPITAL	FORT BENTON	7650	21 5	24	22	2
MEMORIAL HOSPITAL & NURSING HOME	CUTBANK	13905	47.7	53	39	14
BLACKFEET NURSING HOME	BROWNING	15486	53.1	59	49	10
HI-LINE HOME	HAVRE	6082	20.6	23	18	5
LUTHERAN HOME OF THE GOOD SHEPHERD	HAVRE	36300	123.2	137	102	35
LIBERTY COUNTY NURSING HOME	CHESTER	13511	46.0	51	40	11
TETON NURSING HOME	CHOTEAU	14950	47.8	53	41	12
TETON MEDICAL CENTER NURSING HOME	CHOTEAU	5371	17.2	19	24	- 5
TOOLE COUNTY HOSPITAL & NURSING	SHELBY	11396	33.5	37	32	5
SUBAREA TOTAL		353571	1067 2	1185	1030	155

Table 7 - Estimated Long-Term Care (LTC) Bed Need In North Central Montana in 1985

SUBAREA, LTC FACILITY & CITY		# PAT DAYS (1978)	ADJUSTED DAILY CENSUS (1985)	ESTIMATED BED NEED (1985)	LICENSED BEDS (1978)	DEFICIT (+) SURPLUS (-)
SOUTHWESTERN						
PARKVIEW ACRES CONVALESCENT CENTER	DILLON	11215	65 7	73	108	35
BROADWATER COUNTY REST HOME	TOWNSEND	5852	17.5	19	18	1
COMMUNITY NURSING HOME OF ANACONDA	ANACONDA	24297	74.5	83	68	15
BOZEMAN CONVALESCENT CENTER	BOZEMAN	30018	100.3	111	103	0
BOZEMAN DEACONESS HOSPITAL	BOZEMAN	21437	71.6	80	60	20
GALLATIN COUNTY REST HOME	BOZEMAN	19234	64 3	71	56	15
HILLCREST HEALTH CENTER	BOZEMAN	2746	9.2	10	8	2
HILLBROOK NURSING HOME	CLANCY	23943	73.9	82	67	15
COONEY CONVALESCENT HOME	HELENA	20516	69.0	77	60	17
HELENA NURSING HOME & HEALTH FACILITY	HELENA	10373	70.4	78	63	15
PARKSIDE MANOR	HELENA	18973	63 8	71	52	19
WESTERN CARE	HELENA	38013	127 8	142	108	34
MADISON COUNTY NURSING HOME	SHERIDAN	14071	37.0	41	39	2
MOUNTAINVIEW MEMORIAL NURSING HOME	WHITE SULPHUR	5186	15.0	17	11	6
LIVINGSTON CONVALESCENT CENTER	LIVINGSTON	37746	113 8	126	125	1
COLONIAL MANOR OF DEER LODGE	DEER LODGE	20978	60.6	67	60	7
BUTTE PARK ROYAL CONVALESCENT CENTER	BUTTE	63464	169 6	188	200	- 12
CREST NURSING HOME	BUTTE	34691	92.7	103	103	0
SILVER BOW GENERAL HOSPITAL	BUTTE	35497	94 8	105	100	5
SUBAREA TOTAL		438250	1391.5	1544	1409	137

Table 8 - Estimated Long-Term Care (LTC) Bed Need In Southwestern Montana in 1985

SUBAREA, LTC FACILITY & CITY		# PAT DAYS (1978)	ADJUSTED DAILY CENSUS (1985)	ESTIMATED BED NEED (1985)	LICENSED BEDS (1978)	DEFICIT (+) SURPLUS (-)
SOUTH CENTRAL						
BIG HORN COUNTY MEMORIAL HOSPITAL	HARDIN	11721	37 6	42	34	8
MOUNTAIN VIEW REST HAVEN	HARDIN	6362	20.4	23	21	2
CARBON COUNTY HEALTH CARE CENTER	RED LODGE	21819	62.1	69	80	- 11
CARBON COUNTY MEMORIAL NURSING HOME	RED LODGE	6348	18 1	20	24	- 4
CENTRAL MONTANA HOSPITAL-NURSING	LEWISTOWN	17538	50.8	56	70	- 14
VALLE VISTA MANOR	LEWISTOWN	33973	98.4	109	97	12
ROUNDUP MEMORIAL NURSING HOME	ROUNDUP	6365	17 6	20	18	2
PONDERA PIONEER NURSING HOME	CONRAD	22260	67.8	75	63	12
STILLWATER CONVALESCENT CENTER	COLUMBUS	28482	83.4	93	81	12
PIONEER NURSING HOME	BIG TIMBER	17335	42.8	48	48	0
WHEATLAND MEMORIAL NURSING HOME	HARLOWTON	11775	30.9	34	33	1
GLENDEEN NURSING HOME	BILLINGS	6953	46.4	52	36	16
ST. JOHN'S LUTHERAN NURSING HOME	BILLINGS	61762	223.7	249	176	73
VALLEY NURSING HOME	BILLINGS	35221	127 6	142	100	42
WESTERN MANOR NURSING HOME	BILLINGS	56120	203.3	226	158	68
YELLOWSTONE COUNTY NURSING HOME	BILLINGS	20812	75.4	84	58	26
LAUREL NURSING HOME	LAUREL	10071	36.5	41	29	12
SUBAREA TOTAL		374917	1242.5	1383	1126	257

Table 9 - Estimated Long-Term Care (LTC) Bed Need In South Central Montana in 1985

SUBAREA, LTC FACILITY & CITY		# PAT DAYS (1978)	ADJUSTED DAILY CENSUS (1985)	ESTIMATED BED NEED (1985)	LICENSED BEDS (1978)	DEFICIT (+) SURPLUS (-)
EASTERN						
DAHL MEMORIAL NURSING HOME	EKALAKA	5739	15.0	17	21	- 4
CUSTER COUNTY REST HOME	MILES CITY	43048	141.6	157	121	36
FRIENDSHIP VILLA OF MILES CITY	MILES CITY	23576	77.6	86	67	19
DANIELS MEMORIAL NURSING HOME	SCOBEY	15849	45.1	50	55	- 5
GLENDIVE COMMUNITY NURSING HOME	GLENDIVE	26193	93.5	104	75	29
FALLON MEMORIAL NURSING HOME	BAKER	10389	33.3	37	32	5
GARFIELD COUNTY HOME AND HOSPITAL	JORDAN	2229	8.0	9	12	- 3
MCCONE COUNTY NURSING HOME	CIRCLE	5535	17.1	19	40	-21
MALTA NURSING HOME	MALTA	11567	32.7	36	35	1
POWDER RIVER NURSING HOME	BROADUS	3548	12.3	14	40	-26
PRAIRIE COMMUNITY NURSING HOME	TERRY	4354	13.5	15	14	1
RICHLAND HOMES	SIDNEY	29515	103.2	115	85	30
COMMUNITY HOSPITAL NURSING HOME	POPLAR	7379	23.0	26	22	4
FAITH LUTHERAN HOME	WOLF POINT	20969	65.4	73	60	13
ROOSEVELT MEMORIAL NURSING HOME	CULBERTSON	72	6.3	7	40	-33
ROSEBUD COMMUNITY NURSING HOME	FORSYTH	15134	43.7	49	47	2
SHERIDAN MEMORIAL HOSPITAL	PLENTYWOOD	13434	41.4	46	37	9
VALLEY VIEW NURSING HOME	GLASGOW	31591	94 7	105	92	13
FRANCES MAHON DEACONESS HOSPITAL	GLASGOW	578	1.7	2	6	- 4
WIBAUX COUNTY NURSING HOME	WIBAUX	12796	36.0	40	40	0
SUBAREA TOTAL		283495	905.1	1007	941	66

Table 10 - Estimated Long-Term Care (LTC) Bed Need In Eastern Montana in 1985

APPENDIX A
Level of Care Criteria

The Montana Foundation for Medical Care (MFMC) distinguishes the following levels of care:

I. Acute Care:

Acute care is care which is given for the treatment of a medical condition that requires:

A. Immediate availability of diagnostic and/or therapeutic services with equipment.

B. Continued availability of medical supervision and/or other consulting medical staff.

C. Continued availability of licensed nursing personnel.

II. Long-term Care:

Long-term care patients may require a combination of skilled and non-skilled services. Level of care of the long-term care patient is not based on diagnoses or severity of medical conditions but on the type of care and frequency of treatment required. The two basic considerations are:

1. The individual patient's medical needs.

2. The specific services required to fulfill these needs.

A. Skilled Nursing Care:

Skilled nursing care is the care given to a patient under direct supervision of licensed nursing personnel and under the general direction of a physician to *achieve medically desired results* or to assure the *safety of the patient.* Skilled nursing care must be distinguished from supportive care. "The observation and assessment of the total needs of the patient and the rendering of direct services on a 24-hour basis, where the ability to provide the services requires specialized training of an RN or an LPN, must be kept in mind."

1. Since skilled nursing care represents skilled services on a *continuous* basis, the need for a single skilled service, e.g., IM injection twice a week, would rarely by itself justify a decision that skilled nursing care is needed.

2. The classification of a particular service as skilled is based on the technical or professional health training required to effectively perform or supervise the service.

3. The importance of a particular service to an individual patient does not necessarily make it a skilled service, e.g., a primary need of a nonambulatory patient may be frequent changes of position in order to avoid development of decubiti (bed sores). If changing the patient's position is the only regular and frequent service provided, it would not be a skilled service.

4. The possibility of adverse effects from improper performance of an otherwise unskilled service, e.g., improper transfer of patients from bed to wheelchair, does not change it to a skilled service.

B. Intermediate Care:

Intermediate care is the care given to a patient to maintain a stable medical state by meeting his needs of daily living. Intermediate care patients may be provided with some skilled nursing services, but these services are not required on a 24-hour basis.

The determining factor as to whether intermediate level care is required is the *type* of care required, not primarily the *amount* of care.

APPENDIX B

NORTHWESTERN

COUNTY	FACILITY NAME	COUNTY ADM	TOTAL ADM	% COUNTY
FLATHEAD	BIGFORK CONVALESCENT CENTER	68	72	94 44
	FLATHEAD COUNTY NURSING HOME	45	47	95.74
	IMMANUEL LUTHERAN HOME	92	94	97.87
	COLONIAL MANOR NURSING HOME	52	55	94.55
	NORTH VALLEY HOSPITAL & EXTENDED CARE CENTER	102	110	92.73
LAKE	ST. JOSEPH CONVALESCENT CENTER	94	129	72.87
	HAPPY ACRES HOME	2	3	66.67
	WESTSIDE REST HOME	6	6	100.00
LINCOLN	LIBBY CONVALESCENT CENTER	39	41	95.12
	MOUNTAIN VIEW MANOR NURSING HOME	35	43	81.40
MINERAL	MINERAL COUNTY HOSPITAL	9	10	90.00
MISSOULA	COMMUNITY NURSING HOME	134	143	93.71
	HILLSIDE MANOR	136	141	96 45
	ROYAL MANOR NURSING HOME	37	39	94.87
	WAYSIDE NURSING HOME	50	59	84 75
RAVALLI	VALLEY VIEW ESTATES NURSING HOME	46	56	82.14
	NORTH VALLEY NURSING HOME	21	34	61.76
SANDERS	HOT SPRINGS CONVALESCENT	24	36	66.67
	CLARK FORK VALLEY HOSPITAL NURSING HOME	11	11	100.00
SUBAREA TOTAL		1003	1129	88.84

Estimated Number of Incounty Admissions For
Long-Term Care Facilities in Northwestern Montana (1978)

NORTH CENTRAL

COUNTY	FACILITY NAME	COUNTY ADM	TOTAL ADM	% COUNTY
BLAINE	SWEET MEMORIAL NURSING HOME	27	27	100.00
	HARLEM REST HOME	21	32	65.62
CASCADE	CASCADE COUNTY CONVALESCENT NURSING HOME	209	211	99 05
	DEACONESS NURSING HOME	0	137	0.00
	MCAULEY NURSING HOME	15	19	78.95
	PARK PLACE NURSING HOME & REHABILITATION CENTER	228	284	80.28
CHOUTEAU	SANDE CONVALESCENT HOME	2	6	33.33
	CHOUTEAU COUNTY DISTRICT HOSPITAL AT FORT BENTON	16	17	94 12
GLACIER	MEMORIAL HOSPITAL AND NURSING HOME	36	39	92.31
	BLACKFEET NURSING HOME	4	13	30.77
HILL	HI-LINE HOME	6	10	60.00
	LUTHERAN HOME OF THE GOOD SHEPHERD	52	75	69 33
LIBERTY	LIBERTY COUNTY NURSING HOME	15	29	51.72
TETON	TETON NURSING HOME	8	9	88.89
	TETON MEDICAL CENTER-NURSING HOME	40	55	72.73
TOOLE	TOOLE COUNTY HOSPITAL & NURSING HOME	21	25	84 00
SUBAREA TOTAL		700	988	70.85

Estimated Number of Incounty Admissions For
Long-Term Care Facilities in North Central Montana (1978)

SOUTHWESTERN

COUNTY	FACILITY NAME	COUNTY ADM	TOTAL ADM	% COUNTY
BEAVERHEAD	PARKVIEW ACRES CONVALESCENT CENTER	22	48	45.83
BROADWATER	BROADWATER COUNTY REST HOME	16	16	100.00
DEERLODGE	COMMUNITY NURSING HOME OF ANACONDA	56	58	96.55
GALLATIN	BOZEMAN CONVALESCENT CENTER	94	100	94.00
	BOZEMAN DEACONESS HOSPITAL	78	82	95.12
	GALLATIN COUNTY REST HOME	19	20	95.00
	HILLCREST HEALTH CENTER	19	19	100.00
JEFFERSON	HILLBROOK NURSING HOME	57	58	98.28
LEWIS AND CLARK	COONEY CONVALESCENT HOME	97	109	88.99
	HELENA NURSING HOME & HEALTH FACILITIES	34	34	100.00
	PARKSIDE MANOR	25	33	75.76
	WESTERN CARE	43	64	67.19
MADISON	MADISON COUNTY NURSING HOME	11	11	100 00
MEAGHER	MOUNTAINVIEW MEMORIAL NURSING HOME	12	16	75.00
PARK	LIVINGSTON CONVALESCENT CENTER	93	104	89.42
POWELL	COLONIAL MANOR OF DEER LODGE	11	19	57.89
SILVER BOW	BUTTE PARK ROYAL CONVALESCENT CENTER	244	318	76.73
	CREST NURSING HOME	97	123	78.86
	SILVER BOW GENERAL HOSPITAL	101	102	99.02
SUBAREA TOTAL		1129	1334	84 63

Estimated Number of Incounty Admissions For
Long-Term Facilities in Southwestern Montana (1978)

SOUTH CENTRAL

COUNTY	FACILITY NAME	COUNTY ADM	TOTAL ADM	% COUNTY
BIG HORN	BIG HORN COUNTY MEMORIAL HOSPITAL & NURSING HOME	42	50	84.00
	MOUNTAIN VIEW REST HAVEN	7	10	70.00
CARBON	CARBON COUNTY HEALTH CARE CENTER	39	63	61.90
	CARBON COUNTY MEMORIAL NURSING HOME	43	43	100.00
FERGUS	CENTRAL MONTANA HOSPITAL-NURSING HOME	83	91	91.21
	VALLE VISTA MANOR	47	47	100.00
MUSSELSHELL	ROUNDUP MEMORIAL NURSING HOME	6	6	100.00
PONDERA	PONDERA PIONEER NURSING HOME	83	88	94.32
STILLWATER	STILLWATER CONVALESCENT CENTER	46	71	64.79
SWEET GRASS	PIONEER NURSING HOME	16	21	76.19
WHEATLAND	WHEATLAND MEMORIAL NURSING HOME	17	20	85.00
YELLOWSTONE	GLENDEEN NURSING HOME	26	26	100.00
	ST. JOHN'S LUTHERAN NURSING HOME	123	150	82.00
	VALLEY NURSING HOME	98	118	83.05
	WESTERN MANOR NURSING HOME	192	238	80.67
	YELLOWSTONE COUNTY NURSING HOME	49	49	100.00
	LAUREL NURSING HOME	7	7	100.00
SUBAREA TOTAL		924	1098	84.15

Estimated Number of Incounty Admissions For
Long-Term Care Facilities in South Central Montana (1978)

EASTERN

COUNTY	FACILITY NAME	COUNTY ADM	TOTAL ADM	% COUNTY
CARTER	DAHL MEMORIAL NURSING HOME	24	28	85.71
CUSTER	CUSTER COUNTY REST HOME	45	57	78.95
	FRIENDSHIP VILLA OF MILES CITY	60	67	89.55
DANIELS	DANIELS MEMORIAL NURSING HOME	40	43	93.02
DAWSON	GLENDIVE COMMUNITY NURSING HOME	39	50	78.00
FALLON	FALLON MEMORIAL NURSING HOME	20	23	86.96
GARFIELD	GARFIELD COUNTY HOME AND HOSPITAL	8	8	100.00
MC CONE	MCCONE COUNTY NURSING HOME	32	34	94.12
PHILLIPS	MALTA NURSING HOME	10	13	76.92
POWDER RIVER	POWDER RIVER NURSING HOME	20	37	54 05
PRAIRIE	PRAIRIE COMMUNITY NURSING HOME	6	6	100.00
RICHLAND	RICHLAND HOMES	18	22	81.82
ROOSEVELT	COMMUNITY HOSPITAL NURSING HOME	29	29	100.0
	FAITH LUTHERAN HOME	21	23	91.30
	ROOSEVELT MEMORIAL NURSING HOME	1	6	16.67
ROSEBUD	ROSEBUD COMMUNITY NURSING HOME	25	33	75.76
SHERIDAN	SHERIDAN MEMORIAL HOSPITAL	22	22	100.00
VALLEY	VALLEY VIEW NURSING HOME	21	28	75.00
	FRANCES MAHON DEACONESS HOSPITAL	4	24	16.67
WIBAUX	WIBAUX COUNTY NURSING HOME	27	65	41.54
SUBAREA TOTAL		472	618	76.38

Estimated Number of Incounty Admissions for
Long-Term Care Facilities in Eastern Montana (1978)

APPENDIX C

NORTHWESTERN

COUNTY	FACILITY NAME	TOTAL COSTS	PATIENT DAYS	COST PER DAY	MEDICAID REIMBURSE	DIFF
FLATHEAD	BIGFORK CONVALESCENT CENTER	$ 663,695	28,649	$23 17	$23 70	$ 53
	FLATHEAD COUNTY NURSING HOME	$ 558,967	23,505	$23 78	$25.12	$ 1.34
	IMMANUEL LUTHERAN HOME	$ 880,401	49,788	$17.68	$18.69	$ 1 01
	COLONIAL MANOR NURSING HOME	$ 469,691	19,309	$24 32	$25 15	$ 83
	NORTH VALLEY HOSPITAL & EXTENDED CARE CENTER	$ 590,708	19,588	$30.16	$26 63	$ 3.53-
LAKE	ST. JOSEPH CONVALESCENT CENTER	$ 813,297	38,635	$21.05	$20.23	$ 1.82-
	HAPPY ACRES HOME	$ 57,592	3,546	$16 24	$20.00	$ 3.76
	WESTSIDE REST HOME	$ 146,240	8,359	$17 49	$15.98	$ 1.51-
LINCOLN	LIBBY CONVALESCENT CENTER	$ 468,137	22,385	$20.91	$18 77	$ 2.14-
	MOUNTAIN VIEW MANOR NURSING HOME	$ 247,465	4,417	$56.03	$35.67	$20.36-
MINERAL	MINERAL COUNTY HOSPITAL	$ 189,682	7,264	$26.11	$24 98	$ 1 13-
MISSOULA	COMMUNITY NURSING HOME	$ 590,335	20,832	$28.34	$30.15	$ 1.81
	HILLSIDE MANOR	$ 947,135	34,530	$27 43	$29 21	$ 1.78
	ROYAL MANOR NURSING HOME	$ 388,369	17,785	$21.84	$23.53	$ 1.69
	WAYSIDE NURSING HOME	$ 473,003	15,427	$30.66	$24 37	$ 6 29-
RAVALLI	VALLEY VIEW ESTATES NURSING HOME	$ 696,758	34.864	$19.99	$21.33	$ 1.34
	NORTH VALLEY NURSING HOME	$ 488,397	20,684	$23.61	$23.21	$ .40-
SANDERS	HOT SPRINGS CONVALESCENT	$ 323,309	21,539	$15.01	$22.35	$ 7.34
	CLARK FORK VALLEY HOSPITAL NURSING HOME	$ 55,290	4,309	$12.83	$27 12	$14.29
SUBAREA TOTAL		$9,048,471	395,415	$24.03	$24 01	$ 0.02-

Estimated Cost (Expense) Per Patient Day
For Long-Term Care Facilities
In Northwestern Montana
(1978)

NORTH CENTRAL

COUNTY	FACILITY NAME	TOTAL COSTS	PATIENT DAYS	COST PER DAY	MEDICAID REIMBURSE	DIFF
BLAINE	SWEET MEMORIAL NURSING HOME	$ 348,049	13,160	$26.45	$15.50	$10.95-
	HARLEM REST HOME	$ 363,615	20,718	$17.55	$12.00	$ 5.55-
CASCADE	CASCADE COUNTY CONVALESCENT NURSING HOME	$2,629,598	82,330	$31.94	$28.23	$ 3.71-
	DEACONESS NURSING HOME	$ 914,377	31,288	$29 22	$31.58	$ 2.36
	MCAULEY NURSING HOME	$ 296,028	15,228	$19.44	$20.39	$ .95
	PARK PLACE NURSING HOME & REHABILITATION CENTER	$1,816,335	55,865	$32.51	$27.07	$ 5.44-
CHOUTEAU	SANDE CONVALESCENT HOME	$ 165,812	10,331	$16.05	$22.32	$ 6.27
	CHOUTEAU COUNTY DISTRICT HOSPITAL AT FORT BENTON	$ 208,288	7,650	$27 23	$26.50	$ .73-
GLACIER	MEMORIAL HOSPITAL AND NURSING HOME	$ 372,863	13,905	$26.82	$28.00	$1.18-
	BLACKFEET NURSING HOME	$ 407,500	15,486	$26.31	$21.00	$ 5.31-
HILL	HI-LINE HOME	$ 130,631	6,082	$21.48	$22.92	$ 1.44
	LUTHERAN HOME OF THE GOOD SHEPHERD	$ 813,784	36,300	$22.42	$23.25	$ .83
LIBERTY	LIBERTY COUNTY NURSING HOME	$ 443,053	13,511	$32.79	$25.61	$ 7.18-
TETON	TETON NURSING HOME	$ 363,870	14,950	$24.34	$24.00	$ .34-
	TETON MEDICAL CENTER-NURSING HOME	$ 144,579	5,371	$26.92	$25.00	$ 1.92-
TOOLE	TOOLE COUNTY HOSPITAL & NURSING HOME	$ 351,159	11,396	$30.81	$28.00	$ 2.81-
SUBAREA TOTAL		$9,769,541	353,571	$25.77	$23.84	$1.93-

Estimated Cost (Expense) Per Patient Day
For Long-Term Care Facilities
In North Central Montana
(1978)

SOUTHWESTERN

COUNTY	FACILITY NAME	TOTAL COSTS	PATIENT DAYS	COST PER DAY	MEDICAID REIMBURSE	DIFF
BEAVERHEAD	PARKVIEW ACRES CONVALESCENT CENTER	$ 291,436	11,215	$25.99	$24.57	$ 1.42-
BROADWATER	BROADWATER COUNTY REST HOME	$ 133,987	5,852	$22.90	$18.00	$ 4.90-
DEERLODGE	COMMUNITY NURSING HOME OF ANACONDA	$ 659,925	24,297	$27.16	$26.41	.75-
GALLATIN	BOZEMAN CONVALESCENT CENTER	$ 749,555	30,018	$24.97	$25.65	$ .68
	BOZEMAN DEACONESS HOSPITAL	$ 248,650	21,437	$11 60	$32.97	$21.37
	GALLATIN COUNTY REST HOME	$ 368,378	19,234	$19.15	$18.68	$ .47-
	HILLCREST HEALTH CENTER	$ 47,050	2,746	$17.13	$17.13	$ .09-
JEFFERSON	HILLBROOK NURSING HOME	$ 645,477	23,943	$26.96	$27.97	$ 1.01
LEWIS AND CLARK	COONEY CONVALESCENT HOME	$ 657,839	20,516	$32.06	$29.36	$ 2.70-
	HELENA NURSING HOME & HEALTH FACILITIES	$ 257,805	10,373	$24 85	$23.92	$ .13-
	PARKSIDE MANOR	$ 468,211	18,973	$24 68	$27.70	$ 3 10
	WESTERN CARE	$ 738,396	38,013	$19.42	$21.14	$ 1.72
MADISON	MADISON COUNTY NURSING HOME	$ 273,051	14,071	$19.41	$19.07	$ .34-
MEAGHER	MOUNTAINVIEW MEMORIAL NURSING HOME	$ 287,438	5,186	$55.43	$28.73	$26.70-
PARK	LIVINGSTON CONVALESCENT CENTER	$ 874,850	37,746	$23.18	$23 31	$ .13
POWELL	COLONIAL MANOR OF DEER LODGE	$ 497,270	20,978	$23.70	$23.66	$ .04-
SILVER BOW	BUTTE PARK ROYAL CONVALESCENT CENTER	$ 1,800,931	63,464	$28.38	$30.65	$ 2.27
	CREST NURSING HOME	$ 922,739	34,691	$26.60	$26.43	$ .17-
	SILVER BOW GENERAL HOSPITAL	$ 1,167,469	35,497	$32.89	$25.68	$ 7.21-
SUBAREA TOTAL		$11,090,457	438,250	$25.60	$24 79	$ 52-

Estimated Cost (Expense) Per Patient Day
For Long-Term Care Facilities
In Southwestern Montana
(1978)

SOUTH CENTRAL

COUNTY	FACILITY NAME	TOTAL COSTS	PATIENT DAYS	COST PER DAY	MEDICAID REIMBURSE	DIFF
BIG HORN	BIG HORN COUNTY MEMORIAL HOSPITAL & NURSING	$ 281,924	11,721	$24 05	$24 00	$ 05
	MOUNTAIN VIEW REST HAVEN	$ 143,229	6,362	$22 51	$23 27	$ 76
CARBON	CARBON COUNTY HEALTH CARE CENTER	$ 635,967	21,819	$29 15	$28 00	$1 15
	CARBON COUNTY MEMORIAL NURSING HOME	$ 152,056	6,348	$23 95	$23 00	$ 95
FERGUS	CENTRAL MONTANA HOSPITAL-NURSING HOME	$ 605,700	17,538	$34 54	$33 34	$1 20
	VALLE VISTA MANOR	$ 740,344	33,973	$21 79	$23 88	$2 09
MUSSELSHELL	ROUNDUP MEMORIAL NURSING HOME	$ 203,141	6,365	$31 92	$26 00	$5 92
PONDERA	PONDERA PIONEER NURSING HOME	$ 495,105	22,260	$22 24	$21 95	$ 29
STILLWATER	STILLWATER CONVALESCENT CENTER	$ 569,090	28,482	$19 98	$24 89	$4 91
SWEET GRASS	PIONEER NURSING HOME	$ 292,600	17,335	$16 88	$16 44	$ 44
WHEATLAND	WHEATLAND MEMORIAL NURSING HOME	$ 203,056	11,775	$17 24	$22 50	$5 26
YELLOWSTONE	GLENDEEN NURSING HOME	$ 125,786	6,953	$18 09	$22 97	$4 88
	ST JOHN'S LUTHERAN NURSING HOME	$1,541,033	61,762	$24 95	$23 64	$1 31
	VALLEY NURSING HOME	$ 776,011	35,221	$22 03	$22 09	$ 06
	WESTERN MANOR NURSING HOME	$1,195,257	56,120	$21 30	$22 68	$1 38
	YELLOWSTONE COUNTY NURSING HOME	$ 624,374	20,812	$30 00	$30 58	$ 58
	LAUREL NURSING HOME	$ 184,749	10,071	$18 34	$20 50	$2 16
SUBAREA TOTAL		$8,769,422	374,917	$23 39	$24 10	$0 71

Estimated Cost (Expense) Per Patient Day
For Long-Term Care Facilities
In South Central Montana
(1978)

EASTERN

COUNTY	FACILITY NAME	TOTAL COSTS	PATIENT DAYS	COST PER DAY	MEDICAID REIMBURSE	DIFF
CARTER	DAHL MEMORIAL NURSING HOME	$ 104,031	5,739	$18 13	$20 49	$ 2 36
CUSTER	CUSTER COUNTY REST HOME	$ 780,725	43,048	$18 14	$19 50	$ 1 36
	FRIENDSHIP VILLA OF MILES CITY	$ 518,564	23,576	$22 00	$26 18	$ 4 18
DANIELS	DANIELS MEMORIAL NURSING HOME	$ 260,328	15,849	$16 43	$22 00	$ 5 57
DAWSON	GLENDIVE COMMUNITY NURSING HOME	$ 703,911	26,193	$26 87	$25 43	$ 1 44
FALLON	FALLON MEMORIAL NURSING HOME	$ 249,295	10,389	$24 00	$21 00	$ 3 00
GARFIELD	GARFIELD COUNTY HOME AND HOSPITAL	$ 128,865	2,229	$57 81	$17 50	$40 31
MC CONE	MCCONE COUNTY NURSING HOME	$ 261,449	5,535	$47 24	$25 00	$22 24
PHILLIPS	MALTA NURSING HOME	$ 207,955	11,567	$17 98	$20 00	$ 2 02
POWDER RIVER	POWDER RIVER NURSING HOME	$ 335,498	3,548	$94 56	$20 00	$74 56
PRAIRIE	PRAIRIE COMMUNITY NURSING HOME	$ 120,621	4,354	$27 70	$25 50	$ 2 20
RICHLAND	RICHLAND HOMES	$ 684,007	29,515	$23 17	$24 19	$ 1 02
ROOSEVELT	COMMUNITY HOSPITAL NURSING HOME	$ 226,817	7,379	$30 74	$28 38	$ 2 36
	FAITH LUTHERAN HOME	$ 370,000	20,969	$17 65	$23 00	$ 5 35
	ROOSEVELT MEMORIAL NURSING HOME	$ 4,022	72	$55 86	$27 25	$28 61
ROSEBUD	ROSEBUD COMMUNITY NURSING HOME	$ 405,624	15,134	$26 80	$22 97	$ 3 83
SHERIDAN	SHERIDAN MEMORIAL HOSPITAL	$ 602,929	13,434	$44 88	$23 05	$21 83
VALLEY	VALLEY VIEW NURSING HOME	$ 645,532	31,591	$20 43	$23 00	$ 2 57
	FRANCES MAHON DEACONESS HOSPITAL	$ 23,202	578	$40 14	$44 79	$ 4 65
WIBAUX	WIBAUX COUNTY NURSING HOME	$ 338,574	12,796	$26 46	$24 50	$ 1 96
SUBAREA TOTAL		$6,971,949	283,495	$32 85	$24 19	$ 8 66

Estimated Cost (Expense) Per Patient Day
For Long-Term Care Facilities
In Eastern Montana (1978)

REFERENCES

1) U. S. Department of Health, Education and Welfare, Public Health Service, Health Resources Administration, National Center for Health Statistics, **Health Resources Statistics, Health Manpower and Health Facilities,** 1976, Published, 1976.

2) **Reference Manual for Project Review Standards and Criteria,** Tulane University School of Public Health and Tropical Medicine, January 7, 1974.

3) Interagency Task Force: Massachusetts Department of Public Health and the HSAS, **Proposed Interim Standards and Criteria for the Allocation of Long Term Beds,** November 1, 1976.

4) Bernard Ries & J. B. Christenson, **Nursing Home Costs in Montana: Analysis & Policy Applications,** Unpublished Staff Paper in Economics; Agriculture Economics and Economic Department, Montana State University, Bozeman.

4.6
SUMMARY
HOME HEALTH CARE

Home health and supportive services are provided to patients in their own homes or at ambulatory settings for the purpose of preventing disease and promoting, maintaining or restoring health. It offers psychological benefits and possible cost savings over more restrictive settings and delivery systems.

By law, home health agencies in Montana are required to provide skilled nursing care and at least one other direct patient service. These may include: nutritional guidance, occupational therapy, physical therapy, speech and hearing therapy, respiratory therapy, medical social services and homemaker services. The age group primarily served is 65 years and older (the Medicare population), although developmentally and physically disabled confined to their home are also served.

Funding is a major problem experienced by most home health agencies in Montana. It appears that Medicare participation is essential to stabilize any existing program.

The MHSA encourages the continued development of a multi-county service model in which local nurses and other personnel provide local services. Three of the largest agencies in Montana have developed using this concept. It appears that viable home health agencies can be established in the Lewistown, Glasgow, Glendive, and Cut Bank, Shelby areas if a cooperative multi-county organizational structure were used.

HOME HEALTH CARE

Goal:

Home Health Care should be available and easily accessible to all Montanans while at the same time minimizing duplication of service areas. As a planning goal each agency should be able to maintain an active case load of at least 150 clients to remain financially viable.

Objectives:

1. By 1982, encourage the establishment of home health agencies, if they can be shown to be financially feasible, in three different areas which are currently unserved. These areas are:
   - Lewistown Area (Planning District 6 in South Central Montana)
   - Glasgow and Wolf Point Areas (Planning District 1 in Eastern Montana)
   - Cut Bank, Shelby, Conrad and Choteau Areas (Planning District 5 in North Central Montana)
   - Glendive, Wibaux and Baker (parts of Planning District 2 and 3 in Eastern Montana)
2. By 1985, encourage the expansion of four existing agencies into geographical areas currently unserved. In addition, encourage small agencies to expand the scope of services where financially feasible.
3. By 1983, monitor the activities of those agencies delivering services in the same geographical areas to ensure minimal duplication.

The primary means of implementing these strategies is through the Certificate of Need and appropriateness review process. However, before providers will be encouraged to undertake such a project, a number of activities need to be performed. These include:

4. Encouraging third party payors to expand coverage of home health services (within limits to avoid excessive services.)
5. Developing educational programs to make the general public more aware of the content, availability and need for home health services.
6. Developing programs to make physicians, nursing home personnel, and discharge planning personnel in hospitals more aware of the potential advantages of home health care.
7. Encouraging the continuance of federal grant programs to provide start-up monies and expansion funds for home health agencies.
8. Initiating a program to provide the administrators of home health agencies with technical assistance in the area of fiscal management.

Recommended Review Criteria:

1. Each new proposed home health agency or one expanding services should show that the agency is financially viable and capable of becoming self-supporting within three years after initiation of these services.
2. All new agencies must guarantee they will serve all segments of the population and not intentionally restrict services to any specific group.
3. All agencies proposing to initiate or expand services should show support from referral sources (hospitals, nursing homes, physicians and health departments in the communities to be served.)
4. All new home health care agencies should agree to participate in the Medicare program and be certified by Medicare.
5. Any agency that wishes to provide services within the geographic area of an existing agency should prove that it will not destroy or endanger the financial stability of the existing agency or increase patient cost.
6. The availability of manpower such as community nurses, physical therapists, speech therapists, occupational therapists, etc. should be addressed in all certificate of need applications, including those for development of new agencies, expansion of geographic areas or of the services provided.

1.0 Background

Home health care is the provision of health services and supportive services to patients in their own homes or at ambulatory settings for the purpose of preventing disease and promoting, maintaining or restoring health or minimizing the effects of illness or disability.[1]

Home care can be used both as an adjunct to, or as a substitute for, the services offered in more restrictive settings. For many patients, it offers valuable psychological benefits by keeping them in a familiar environment, by providing continuing dignity, and by maintaining supportive family relationships. [2] The overall cost of these services is often less than that delivered in other settings. In 1976, the U. S. General Accounting Office reviewed 20 publications which compared the costs of home health care to those of alternative services. Nineteen of the 20 showed that home

Program	Number of Home Care Patients	Avg. Number of Hospital Days Saved per Patient	Total Number of Hospital Days Saved	Total Net Savings	Total Savings per Patient
Blue Cross of Greater Philadelphia Home Care Program	3,940	13	51,220	$1.3 Mil.	$330
Rochester (New York) Home Care Association Program	1,500	21	31,500	$1.0 Mil.	$667

Table 1

- Results of Two Studies Comparing the Costs of Home Health Care With Hospital Inpatient Days.

SOURCE: American Medical Association "Statement on Home Health Care" Chicago, Illinois, 1973.

health care can be less expensive under some circumstances than alternative institutional care. Table 1 presents the results of two studies comparing hospitalization with home health costs.

In Montana, all agencies delivering skilled nursing services and one additional therapeutic service in the home are required to be licensed. As a result of this legislation, all new agencies and those existing agencies wishing to expand either their service area or their scope of services must apply for a Certificate of Need from the State Health Planning and Development Agency. The purpose of these guidelines is to develop MHSA policy toward Home Health Care and to establish review criteria for the future development of these agencies.

Besides nursing services, some of the other services commonly delivered by home health agencies include:

- Home Health Aide and Homemaker Services
- Nutritional Guidance
- Occupational Therapy
- Physical Therapy
- Speech Therapy
- Medical Social Services
- Respiratory Therapy

Agencies providing home health care can be based in hospitals, long-term care facilities, public health departments, or they can be profit or non-profit, independent organizations. There are a variety of organizational arrangements in which different services are provided. First, the agency may provide the service with its own staff. Most agencies have the capability of delivering at least skilled nursing care and homemaker services. Second, some services such as physical, occupational and speech therapy may be provided under a contract with another provider. Finally, because some services such as barber, cosmetology, pastoral and transportation services are not reimbursed by third party payors, the agency may arrange for them to be available to their clients upon request.

2.0 Description of the Present Situation

2.1 Incidence, Prevalence and Mortality

The age group predominantly served by Home Health Care agencies is those persons 65 years of age and older. In one national study of 12 Home Health agencies, the median age of the clients served was 69; about 63 percent were 65 years and over.[3] However, home care is also provided to the developmentally disabled, the chronically ill and any others requiring this type of care. In 1976, about 62 percent of the visits made by Montana Home Health Agencies were to Medicare patients.

Medicare participation seems essential for most home health agencies to survive. To be eligible for Medicare reimbursement, each agency must also be certified by the Medicare program. In Montana, the Medicare certification requirements and the State's licensing requirements are the same.

2.2 Current Inventory and Utilization Levels

Figure 1 shows the location of licensed home health agencies and the areas currently being served in Montana. At the present time, there are 18 licensed home health agencies which provide services or have Certificate of Need approval to deliver services. Four agencies were approved in 1978, reflecting an increased interest in Montana to provide the services. No new agencies applied to initiate services in 1979. Two of the four agencies issued a Certificate of Need in 1978 did not become operational.

The types of organizations sponsoring home health agencies in Montana appear to be almost equally split among Public Health Departments (8), Hospitals (5) and independent, non-profit corporations (5). Two of the hospital based agencies (Montana Deaconess and Columbus) and the Missoula Rehabilitation Center primarily serve their parent organization's former patients. Similarly, the Blackfeet Tribal Home Health Agency primarily serves Indians on the Blackfeet Reservation.

Five of the home health agencies serve multi-county areas. They are:

- Yellowstone City-County Health Department - serving Yellowstone, Big Horn, Carbon, Stillwater, Musselshell and Golden Valley Counties.
- Westmont Home Health Care, Inc. (Helena) - serving Lewis and Clark, Jefferson and Broadwater Counties.
- Area V Home Health Agency (Anaconda) - serving Deer Lodge, Powell, Beaverhead and Madison Counties.
- Northern Montana Home Health Agency (Havre) - serving Hill and Blaine Counties.

Table 2 indicates the types of services offered by each agency. As required by their license, all agencies deliver skilled nursing care. All agencies also have some home health aide-homemaker capability as well. The larger agencies also offer physical therapy and speech therapy services. The other services vary from agency to agency, depending upon the needs of the patients, the local resources available, and whether or not they are reimbursable.

Table 3 presents 1978 utilization figures for the agencies in operation at that time. The number of nursing visits varies from patient to patient depending on their need. On the average, each patient receives about 11 nursing visits a year. This is similar to national figures. A national study of 12 home health agencies conducted in 1974 in cooperation with the National League of Nursing indicated that the average home health patient had 16 visits. Of these, 10.8 involved skilled nursing; 4.3 home health aide; and 0.6 physical therapy.

Based upon incomplete reporting, the total costs to operate the home care system in Montana in 1978 were $1.4 million. The average cost per patient was $314.51, and the cost per nursing visit was about $28.94. About 59 percent of the revenues generated are from Medicare. It is noted, however, that all of these statistics are extremely variable.

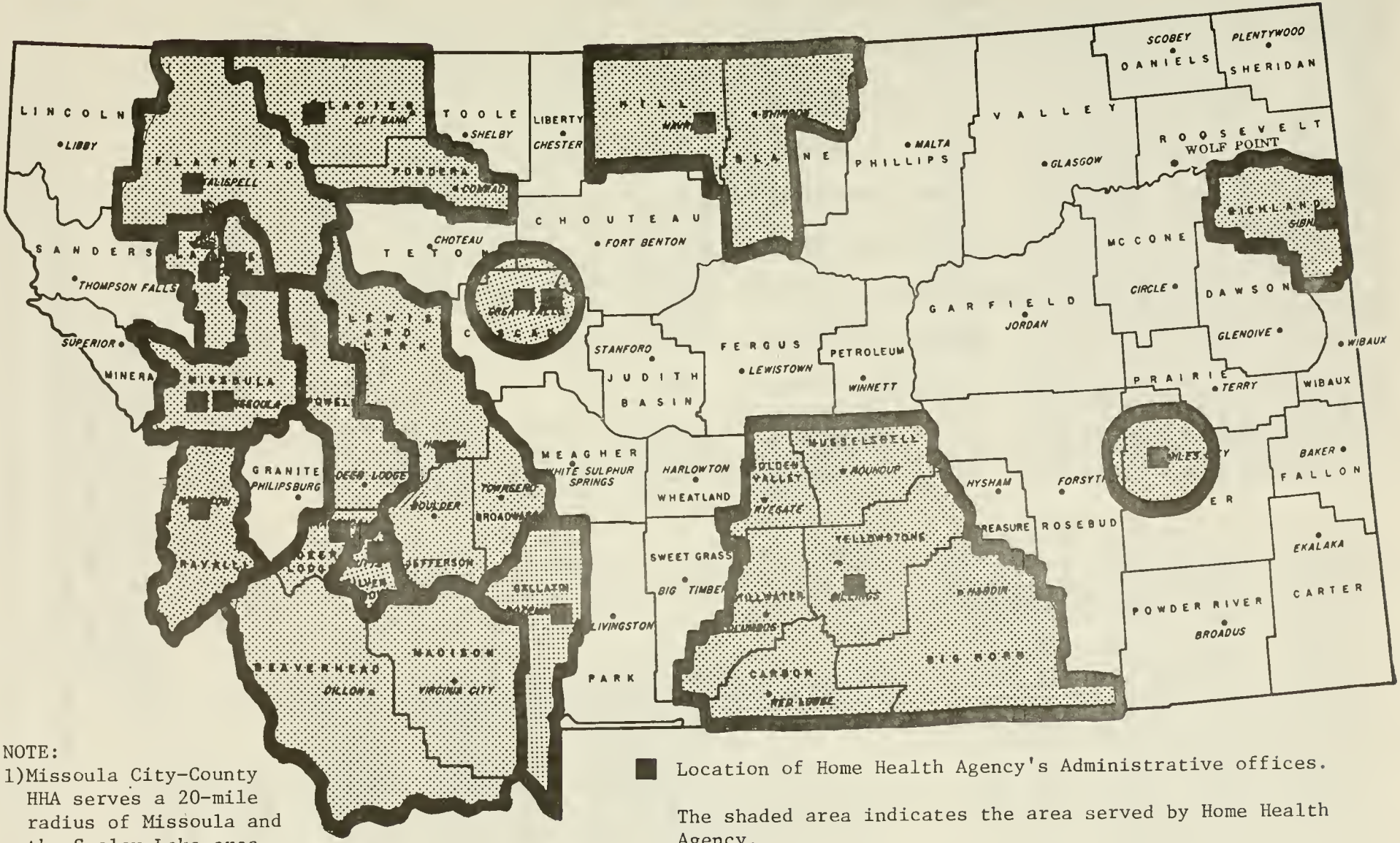
Funding is a major problem experienced by most home health agencies in Montana. Because of Medicare and Medicaid restrictions and similar restrictions on reimbursement from other third-party payors, many home health agencies have funding lags for reimbursement, or carry patients for whom they will receive no reimbursement, unless the patient can pay for the service himself. In addition, many third-party insurers in Montana do not offer home health coverage. For example, Blue Cross, one of the Medicare Fiscal Intermediaries serving Montana, does not provide this coverage in its private insurance plans.

In most cases, home health agencies must seek extra funding in addition to the reimbursement they receive from patients and insurers. Some receive partial funding from the counties they serve, from the hospitals in which they are based, or from private donations. Usually these funding sources are unreliable.

Another problem home health agencies sometimes face is obtaining crucial physician support and referrals. Sometimes doctors are unaware of the program or are unwilling to participate in it. It seems physician education programs might be warranted. At the same time, many of the prospective patients appear to associate home health services with welfare services. Again, it seems that educational efforts are needed to inform the public about home health care and what it is.

3.0 Estimated Future Resource Requirements

A major constraint in providing home health care in Montana



NOTE:

1) Missoula City-County HHA serves a 20-mile radius of Missoula and the Seeley Lake area.

2) St. Joseph HHA (Polson) also serves the Hot Springs area of Sanders County.

3) The Blackfeet HHA is not yet operational in its entire catchment area.

■ Location of Home Health Agency's Administrative offices.

The shaded area indicates the area served by Home Health Agency.

Figure 1 - Location and Catchment Areas
Of Home Health Agencies in Montana (1979)

is the distance between the agency and the patients - in short, accessibility. The rural nature of much of Montana means a great deal of travel time, and therefore some of the expense involved in providing home health care is spent in traveling. Because of the geographical expanse of Montana and its small population base, having a home health agency in every county would be impractical.

Instead, the further development of agencies serving multi-county districts with satellite units (without administrative personnel) should be encouraged. This strategy would provide a greater population base for home health agencies, enabling them to provide a more comprehensive "package" of services and helping them to reduce their administrative costs. This concept is being used by the three largest home health agencies in Montana currently serving multi-county districts.

In estimating service need, the Governor's 12 planning districts are used as a geographical base. This does **not** mean that all home health agencies should be organized according to these districts. Each agency must determine for itself how big an area it can practically serve and what is financially feasible for it to serve. The Governor's planning districts simply suggest a possible strategy and method for delivering multi-county services.

Because home health care is a relatively new concept in Montana, and because these agencies need not be free-standing, it is difficult to estimate the number of home health agencies in Montana. The Florida State Department of Health and Rehabilitative Services estimated that each home health care agency should optimally have an active case load of 150 clients. Their assumption, however, was based upon a free-standing, separate organization. In Montana, many of the newly developed home health agencies are sponsored and supported by an existing service (such as a hospital or public health department). In these situations, the sponsoring group is able to use the home health person-

Subarea and Home Health Agency	Nursing	Homemaker	Physical Therapy	Occupational Therapy	Speech & Hearing Therapy	Medical Social Services	Nutritional Guidance	Respiratory Therapy	Pharmaceutical	Clinical Laboratory	Equipment & Supplies
Northwestern											
Ravalli County Public Health Nursing Service	not available										
Missoula City-County Health Dept. (HHA)	X		X	X	X						X[1]
Missoula Rehabilitation Center	X		X	X	X	X	X				X
Flathead County Home Health Agency	not available										
St. Joseph Home Health Care Agency	X	X	X	X	X	X	X	X	X	X	X
Lake County Home Health Agency	X	X	X								X
Mineral County Home Health Agency	not available										
North Central											
Montana Deaconess Medical Center Home Health Agency	X		X	X	X	X	X	X	X	X	X
Columbus Hospital Home Health Agency	not available										
Northern Montana Hospital (HHA)	X		X					X			
Blackfeet Home Health Service	X		X		X	X				X	X
Southwestern											
Area V Home Health Agency	X	X	X								X
City-County Home Health Service (Butte)	X	X	X		X	X	X	X			X
West-Mont Home Health Care, Inc.	X	X	X	X	X	X	X	X			X
Gallatin County Health Department	not available										
South Central											
Yellowstone City-County Health Visiting Nurse Service	X	X	X	X	X						X
Eastern											
Nursing Care in the Home	X										
Holy Rosary Hospital Home Health Service	X		X		X	X	X	X	X		X

1) Supplies only

Table 2 - Services Offered By
Licensed Home Health Agencies in Montana (1978)

Source: Unpublished data from the Annual Survey of Home Health Agencies 1978, Montana State Department of Health & Environmental Sciences.

nel at times when they are not required to provide home care. Consequently, the case load requirements are much lower.

At this time there are no established and accepted case loads for home health agencies. Consequently, Table 4 only estimates the number of potential clients which may be served by a home health agency in each Governor's Administrative District. In preparing these estimates, it is assumed that about 12 patients per 1,000 population will use home health care services if they are available. It also shows the number of home agencies currently operating in each district.

It is emphasized that these estimates should be studied in light of financial feasiblity (the potential amount of revenue generated by providing services) and resources (personnel) required.

Based upon the estimates in Table 4 and comparing them to the areas served by existing agencies, it appears that the four areas having the most potential of developing home health agencies are:

- District 6 - Although the Yellowstone City/County Health Department is serving the three southern counties, it still appears that an agency might be established in the Lewistown area.
- District 1 - There are currently no home health agencies serving the residents of this area. It appears that Glasgow or Wolf Point might be able to support a regional agency in the near future.
- District 5 - Although the Blackfeet Home Health Agency (Browning) is serving Glacier and Pondera Counties, it appears that Shelby, Cut Bank, Chester, Choteau and Conrad might be able to support a joint multi-county agency.
- District 2 - The Badlands Home Health Agency was approved in 1978 to serve Dawson, Wibaux and Fallon Counties. Because the federal grant for startup was never awarded, it never became operational. Nevertheless, a multi-county home health service in this area still appears feasible.

At the same time, other home health agencies should consider expanding their services to surrounding counties. Most of the rural counties do not have a sufficient population base to individually support a home health agency, but could contribute to making a regional agency a viable institution.

Subarea & Home Health Agency	Location	Number Patients Served	Total Number Nursing Visits	Total Operating Expenses	Percent Revenue from Medicare
Northwestern					
• Ravalli County Public Health	Hamilton	N/A	N/A	N/A	N/A
• Missoula City-County Health Dept.	Missoula	133	2,300	$ 83,542	64%
• Missoula Rehabilitation Center	Missoula	N/A	N/A	N/A	N/A
• Flathead County Home Health Agency	Kalispell	N/A	N/A	N/A	N/A
• St. Joseph Home Health Care Agency	Polson	50	504	$ 8,434	94%
• Lake County Home Health Agency	Polson	227	6,760	$ 85,161	83%
• Mineral County Home Health Agency	Superior		No longer operational		
North Central					
• Montana Deaconess Medical Center (HHA)	Great Falls	1,090	4,752	$ 53,831	59%
• Columbus Hospital Home Health Agency	Great Falls	N/A	N/A	N/A	N/A
• Northern Montana Hospital (HHA)	Havre	1	18	$ 3,853	0%
• Blackfeet Home Health Service	Browning	90	738	$ 53,571	12%
Southwestern					
• Area V Home Health Agency	Anaconda	400	2,987	$ 71,598	25%
• City-County Home Health Service	Butte	603	10,999	$295,896	69%
• West-Mont Home Health Care, Inc.	Helena	825	11,149	$384,471	62%
• Gallatin County Health Department	Bozeman	N/A	N/A	N/A	0%
South Central					
• Yellowstone City-County Health Department - Visiting Nurse Service	Billings	840	4,281	$214,225	75%
Eastern					
• Nursing Care in the Home	Sidney	106	2,534	$106,417	24%
• Holy Rosary Hospital Home Health Service	Miles City	92	N/A	$ 40,790	30%

Table 3 - 1978 Utilization Statistics
For Home Health Agencies in Montana

Source: Unpublished data from the Annual Survey of Home Health Agencies 1978, Montana State Department of Health and Environmental Sciences

Table 4
Estimated Need for Home Health Agencies in Montana by 1985 (by Governor's Planning Districts).

	1985 Population	Estimated Home Health Patients	Number of Home Health Agencies Currently Serving The Area
Northwestern Montana			
District 10 — Lincoln, Flathead, Sanders & Lake Co.	102,455	1,229	3
District 11 — Mineral, Missoula & Ravalli Co.	103,638	1,243	3
North Central Montana			
District 4 — Liberty, Hill & Blaine Counties	29,529	354	1
District 5 — Glacier, Toole, Pondera, Teton, Chouteau & Cascade Counties	127,237	1,527	3
Southwestern Montana			
District 8 — Lewis & Clark, Jefferson & Broadwater Counties	58,528	702	1
District 9 — Gallatin, Park & Meagher Counties	60,864	730	1
District 12 — Powell, Granite, Silver Bow, Deer Lodge, Beaverhead & Madison Counties	86,406	1,036	2
South Central Montana			
District 6 - Judith Basin, Fergus, Petroleum, Musselshell, Golden Valley & Wheatland Co.	24,676	296	0
District 7 — Yellowstone, Stillwater, Sweet Grass, Carbon & Big Horn Counties	156,141	1,874	1
Eastern Montana			
District 1 — Phillips, Valley, Daniels, Sheridan & Roosevelt Counties	41,641	499	0
District 2 — Garfield, McCone, Dawson, Richland, Prairie & Wibaux Co.	33,010	390	2
District 3 — Treasure, Rosebud, Custer, Powder River, Carter & Fallon Counties	35,601	427	1

REFERENCES

1) Revised Codes of Montana, Section 69-7301, subsection (2), Providing for the Licensing and Regulation of Home Health Agencies in Montana by the Department of Health and Environmental Sciences.
2) American Medical Association, "Statement on Home Health Care," Chicago, Illinois, 1973, Section 5.
3) Levenson, G., **Type, Length and Cost of Care for Home Health Patients,** Council of Home Health Agencies and Community Health Services, National League for Nursing, New York, 1975, Pub. No. 21-1589.

4.7
ALCOHOL AND DRUG ABUSE SERVICES SUMMARY

This component summarizes the State Alcohol and Drug Services Plan and provides the MHSA with background material for future Proposed Use of Federal Funds (PUFF) reviews.

The Alcohol and Drug Abuse Division (ADAD) within the Department of Institutions has been designated as the state alcohol authority and is responsible for administering the program. Local providers are autonomous and provide a variety of services ranging from outreach to inpatient care.

It is estimated that over 86,000 Montanans need alcohol services and another 1,000 need drug treatment services. Profiles of those receiving different types of services are presented in the component.

The projected FY 80 budget for these programs amounts to $4,651,836. Approximately 17 percent is used by ADAD to run the program. Alcohol programs are expected to use about 80 percent of the remaining program money.

Between August 1977 and September 1978, 5,090 individuals were treated by the alcohol programs, 1,200 had attended DWI Court Schools, and 617 were treated in drug programs.

In the future, emphasis will be placed upon strengthening existing alcohol programs and providing alcohol services to special population groups (women, elderly and rural residents). ADAD also plans to continue current capacities in its drug programs — slots for 400 outpatient drug-free clients and ten residential clients. ADAD is proposing a new outpatient drug program be developed on the Flathead Indian Reservation.

Alcohol and Drug Abuse Services

Goal:

Drug and alcohol abuse services should be available to 10 percent of the Montana abusers at reasonable costs and be geographically accessible.

Objectives:

1) By 1980 provide a comprehensive means of assessing the needs of Montana for substance abuse services and develop and update an annual plan to meet identified needs.
2) By 1980 provide technical assistance for obtaining third party reimbursements from insurance providers to local drug and alcohol programs.
3) By 1981 provide technical assistance to county commissioners for implementation of county plans for services.
4) By 1980 monitor the effectiveness of the uniform client recordkeeping system for needed corrections.
5) By 1980 support and coordinate new and existing prevention and education resources statewide.
6) By 1981 support special emphasis programs (for women, elderly, rural citizens, Indians and youth) and to continue to assess the needs of special populations and design activities to meet those needs.

Recommended Review Criteria for Federal Alcohol Grants

1) For continuation grants, (applications for the second and each successive year of federal funding), copies of the most recent financial audit should be submitted with the application and made available at the MHSA public review.
2) Application for a Certificate of Need from the State Department of Health, Bureau of Health Planning and Resource Development, should be acquired prior to the development or expansion of alcohol services that are hospital or nursing home based. Alcohol programs which are free standing do not have to apply for a Certificate of Need. The awarding of a Certificate of Need should be based on a demonstrated community need for the service, avoidance of unnecessary duplication or similar health services, and demonstrated financial feasibility. For maximum efficiency, intermediate care beds should have an occupancy rate of 80 percent.
3) Emergency alcohol services should be available in each region on a twenty-four hour, seven day per week basis.
4) Prevention/education, intermediate, and aftercare capability should be available in all regions and be based at the community level.
5) To make alcohol services more accessible to the patient, programs should be regionalized with satellite counselors providing services to the outlying communities.
6) Provisions should be made for coordination of the organizations, agencies and institutions dealing with the alcoholic (for example, law enforcement, Mental Health Centers, hospitals, alcohol programs, emergency medical services, Alcoholics Anonymous, Galen State Hospital, etc.).
7) Aftercare should be provided to the patient by the service agency initiating the alcohol services to strengthen the rehabilitation process. Therefore, provisions should be made for a continuum of care prior to an individual being released from an alcohol facility. In the event an individual will be residing in another area after he is released, an appropriate referral network should be operating to ensure continuity.
8) Every effort should be made to ensure that the family is involved in the overall treatment process.
9) Alcohol service facilities must be licensed in accordance with the Life Safety Code and the standards and procedures for the operation of alcohol facilities set forth and described in Montana Administrative Code.
10) Alcohol service programs should develop treatment plans tailored to meet the needs of each individual involved in the process.

Recommended Review Criteria of Drug Services Component

1) For continuation grants, (applications for the second and each successive year of federal funding), copies of the most recent financial audit should be submitted with the application and made available at the MHSA public review.
2) Drug services should be reimbursed through a fee-for-service schedule, based on the client's ability to pay. Application for a Certificate of Need from the State Department of Health, Bureau of Health Planning and Resource Development, should be obtained prior to the development or expansion of drug services which are hospital or nursing home based. The awarding of a Certificate of Need should be based on a demonstrated community need for the service, avoidance of unnecessary duplication of similar health services, and demonstrated financial feasibility.
3) Free-standing units making application for Federal funds should request a review application for the Proposed Use of Federal Funds from the Montana State Department of Health and Environmental Sciences, Health Planning and Resource Development Bureau, the Department of Institutions, and the Montana Health Systems Agency.
4) Emergency drug services should be available in each region on a 24-hour, seven day-per-week basis.
5) To make drug services more accessible to the patient, programs should be regionalized with satellite counselors providing services to the outlying communities.
6) Provisions should be made for the coordination of organizations, agencies, and institutions providing drug services.
7) Aftercare should be provided to the patient when he is released from a treatment center to strengthen the rehabilitation process.
8) The professional staff of alcohol and drug programs should be certified. Certification of Counselors should be based on training, education, and experience. Those not meeting specific requirements should be excluded from the delivery system or placed on a provisional status under the supervison of a certified staff member, where he/she can obtain the skills necessary to upgrade himself/herself to meet certification. At the present time, certification of drug and alcohol counselors in Montana is voluntary.
9) Treatment plans should be tailored to meet the needs of each individual entering treatment.

1.0 Background

This health plan component summarizes the state plan for Alcohol and Drug Abuse Prevention, Treatment and Rehabilitation prepared by the Alcohol and Drug Abuse Division (ADAD), Department of Institutions, and adopted by the State Health Coordinating Council (SHCC) on September 13, 1979. While the original plan is intended to guide the administration of the overall state program, this component is designed to assist the MHSA in future reviews. Approximately 10 percent of the program monies available to these programs are subject to MHSA review. All of this is federal funding and includes:

- Alcohol Demonstration Programs
- Alcohol Research Programs
- Alcohol Training Programs
- Drug Abuse Research Programs
- Drug Abuse Training Programs
- Alcohol Community Service Programs
- Drug Abuse Demonstration Programs
- Drug Abuse Education Programs

The MHSA has PUFF review and approval authority over the first five programs and A-95 review and comment over the latter three.

In Montana, both the alcohol and the drug abuse programs are administered by the Alcohol and Drug Abuse Division of the Department of Institutions. The responsibilities of the Alcohol and Drug Abuse Division include:

1) Developing the state plan for Alcohol and Drug Abuse Prevention, Treatment and Rehabilitation Programs.
2) Providing technical assistance to local programs to ensure compliance with state and federal guidelines.
3) Dispersing funds to local agencies according to the priorities and needs outlined in the state and regional plans.
4) Gathering and analyzing statistical data from all state approved treatment facilities.
5) Coordinating with the Mental Health Division for evaluation and monitoring of alcohol and drug programs.
6) Developing an alcohol and drug abuse education curriculum.
7) Establishing standards for and certifying counselors (to be implemented in FY 1981).
8) Providing relevant training opportunities for substance abuse counselors in the criminal justice system.

In these efforts the ADAD is guided by the Montana Advisory Council on Alcohol and Drug Dependency which is appointed by the Governor.

At the local level, the types of patient services offered may include:

Detoxification Care: Services required for the treatment of persons intoxicated or incapacitated by alcohol and/or drugs. Detoxification involves clearing the system of alcohol and/or drugs and enabling individual recovery from the effects of intoxification. These services include screening of intoxicated persons, the counseling of clients to obtain further treatment, and referral of detoxified persons to other appropriate treatment programs. Medical detoxification refers to short-term treatment in a medical setting with 24-hour supervision, while non-medical detoxification refers to short-term treatment in a social setting with 24-hour supervision.

Inpatient Care: Treatment for persons requiring 24-hour supervision in a hospital or suitably equipped medical setting. Services include medical evaluation and health supervision; alcoholism education, organized individual, group, and family counseling; discharge referral to necessary supportive services; and a client follow-through program after discharge.

Intermediate Care: Treatment for persons requiring 24-hour supervision in a community based residential setting. Treatment includes a minimum limited medical evaluation, alcoholism education, organized individual, group and family counseling, opportunity for relearning social skills, discharge referral to necessary supportive services, and discharge client follow-through.

Short-term Intermediate Care: Less than 30 days of treatment.

Long-term Intermediate Care: Thirty days or more of treatment.

Transitional Living (Half-way House): A non-medical residential treatment facility in a community based setting. These facilities provide a transitional phase for individuals who have recently received alcoholism detoxification, inpatient or intermediate care services and require a moderately structured living arrangement. Services provided include counseling services (1-1 and group), alcoholism education, social and recreational activities. These individuals are encouraged to seek vocational rehabilitation, occupational training, education and/or employment as soon as possible.

Outpatient Care: Services provided on a regularly scheduled basis to clients residing outside a program. Services include crisis intervention, screening and evaluation, individual, group and family counseling, alcohol education, referral services, employment assistance and follow-up.

Together these services comprise a system of services for the alcohol and drug abuser. This system is depicted schematically in Figure 1.

Although Alcohol services do not flow into this continuum easily, alcohol providers try to make referrals to follow this logical progression of treatment. This is many times very difficult because individual clients enter the system with problems in varying degrees of severity. Clients can enter the system at any of the levels of care. Theoretically, persons with more severe problems would enter the system at the high (more intense) levels shown in the diagram. Once in the system, if the client relapses, he could move to a more structured level of care. For example, if a client is placed in transitional care and has a heavy drinking episode, he may require the services found in inpatient care or a detoxification facility.

2.0 Description of the Current Situation

2.1 Incidence, Prevalence and Mortality

The estimated number of persons in each region (subarea) needing alcohol and drug abuse treatment services is presented in Table 1. These estimates were developed by the Alcohol and Drug Abuse Division of the Department of Institutions.

The estimated number of alcoholics and alcohol abusers is based upon the assumption that 8.5 percent of all Montanans and 70 percent of the Native Americans are in need of alcohol treatment services. The Indian estimate was originally made in a study by the Montana United Indian Association. The proportion of alcohol abusers in the general population is assumed to be higher than the national average (7.0 percent) because of the high level of beer and alcohol consumption in the state.

The estimates of the number of drug abusers is based upon

a National Institute for Drug Abuse methodology. Data from the Southwestern Montana Drug Program clients is used and it is extrapolated to the rest of the state.

Other indicators of the magnitude of these two problems in Montana are:

- In 1976, 119 people in Montana died of cirrhosis of the liver (in 63 cases, the cause of death was classified as alcoholic cirrhosis of the liver). In 1977, 100 deaths were attributed to cirrhosis of the liver (1977 statistics are not reported on the number of those which were alcohol related).
- Thirty-nine (39) percent (124 out of 320) of the people killed in automobile accidents in Montana during 1977 had been drinking (i.e., had 0.05 percent or more alcohol in their blood); fifty-one (51) percent of the drivers killed had been drinking.
- In 1977, eight persons died in Montana from accidental poisoning by drugs, medications, and other solid and liquid substances. (Thirteen people died from these same causes in 1976.)

Region (Subarea)	Estimated Total Population (1976)	Estimated Number Alcohol Abusers	Estimated Number Drug Abusers
I (Eastern)	99,700	14,127	97
II (North Central)	147,100	19,080	143
III (South Central)	151,200	18,440	147
IV (Southwestern)	179,800	16,473	182
V (Northwestern)	174,700	18,443	210
	752,500	86,563	779

1) Based upon 1975 population estimates. The Alcohol and Drug Abuse Division of the Department of Institutions has assumed that 70 percent of the Indians and 8.5 percent of the non-Indians in Montana are in need of alcohol treatment services.

2) Estimate based upon admission statistics for 15-25 year olds to Southwestern Montana Drug Program (Region IV and Missoula County in Region V). The regional estimates have been pro-rated by MHSA staff based upon total 1976 population estimates.

TABLE 1 - Estimated Number of Alcohol and Drug Abusers in Montana

Source: Montana Comprehensive Plan for Alcohol and Drug Abuse Prevention, Treatment and Rehabilitation, July 1, 1979 to June 30, 1980

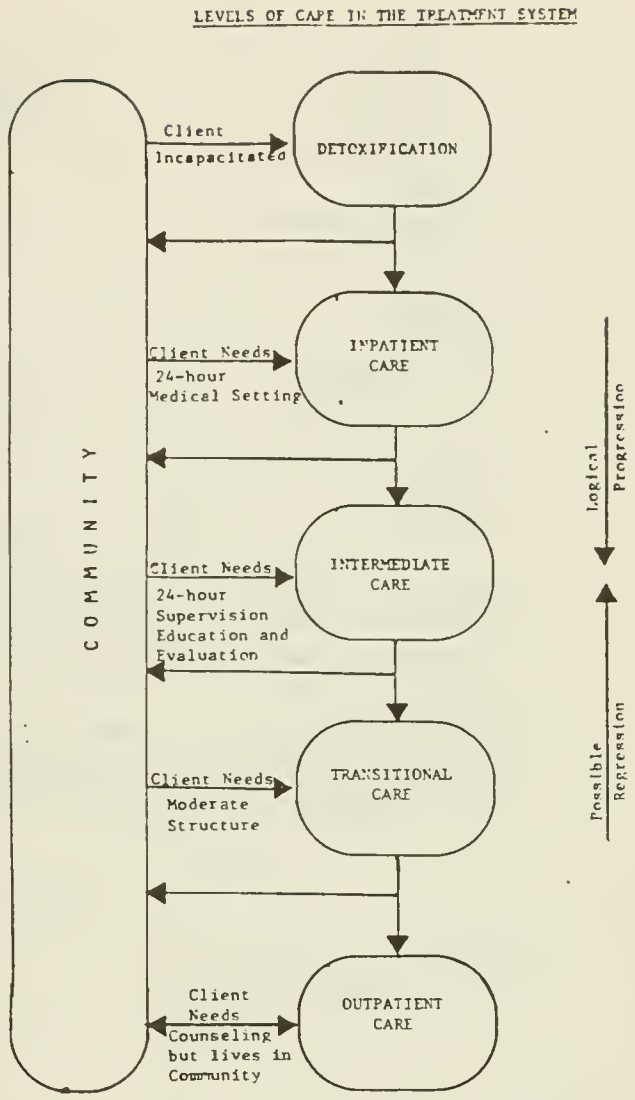


Figure 1 - Levels of Care in the Alcohol Treatment System and movement of client through that system.

The people being treated in Montana for these two problems have some similarities. A large proportion of them, for instance, are young. Table 2 illustrates some of the personal characteristics of persons receiving treatment. Profiles of these four groups include:

- A typical client of a local alcohol treatment program is probably male (74 percent), unemployed (70 percent), without a family (67 percent were divorced, separated or single), and middle-aged (32 percent between the ages of 31 and 44, 31 percent between 45 and 64). Twenty six (26) percent of the clients treated were Native Americans.
- Persons admitted to DWI Court schools tend to be young (52 percent under 30), white (6 percent Native Americans), and employed (27 percent unemployed) males (88 percent).
- Clients using drug treatment centers were usually under 25 years of age (78 percent) and male (74 percent). Eleven percent were Native Americans. Thirty-five percent of the admissions abused amphetamines.
- Eighty-six (86) percent of the persons arrested for drug related offenses in 1977 were under 25 years of age (30 percent were under 18). Seventy (70) percent of those under 25 were arrested for possessing and/or selling marijuana.

2.2 Current Inventory and Utilization Levels

The Division of Alcohol and Drug Abuse, Department of Institutions, is designated as the state agency to administer the drug and alcohol programs within the state which receive state and federal monies. Table 3 shows the FY 1979 and 80 budgets of these programs. The alcohol monies are roughly four times greater than the drug program funding. About $820,000 (17%) is used by the agency to perform its functions; the rest is distributed to the various alcohol and drug programs to provide direct services.

Alcohol Services

Formal inpatient services for the alcoholic are currently provided by five hospitals in the state. These are Frances Mahon Deaconess (Glasgow), Holy Rosary (Miles City), Silver Bow General (Butte), Galen (Galen) and Missoula General (Missoula). The current capacity utilization levels and projected budgets of each are listed in Table 4. With the exception of Silver Bow General Hospital's Comp Care Unit, all of the facilities have been organized as nonprofit organizations. None of these facilities have been reviewed by the MHSA as recipients of federal grants.

Personal Characteristic	Percentage of Clients: Alcohol Treatment Centers	DWI Court Schools[4]	Drug Treatment Clients	Drug Arrests[3]
Under 25 years of age	20%[1]	38%	78%	86.2%
Divorced, separated or single	67%	79%	not available	not available
Unemployed	70%	27%	not available	not available
Native Americans[2]	26%	6%	11%	not available
Male	78%	88%	74%	not available
Total number of persons	5,090	1,261	619	1,482

1) Sixty-three (63) percent of the persons treated were between 31 and 64 (32 percent were between 31 and 44, and 31 percent were between 45 and 64).

2) Indians constitute roughly four percent of Montana's population.

3) Based upon 1977 data.

4) The DWI referrals are referrals from the courts which require participation in an approved program. Judges have the discretion of allowing the offender to attend any program which offers the standard curriculum provided by the state. These sessions consist of classroom work five evenings, each two hours in length. The fee is $50 which is paid to the program by the client.

TABLE 2 - Profiles of Persons with Known Alcohol or Drug Abuse Problems

Source: Montana Comprehensive Plan for Alcohol and Drug Abuse, Prevention, Treatment and Rehabilitation, July 1, 1979 to June 30, 1980.

Funding Source	Budget FY 79	Budget FY 80
Alcohol		
State Public	$2,245,369[1]	$1,779,697[4]
Local Public	1,220,955[2]	1,528,795[5]
Sub Total	$3,466,324	$3,308,492
Federal	390,000[3]	390,000[6]
Total	$3,856,324	$3,698,492
Maintenance of Effort	882,030	498,796
TOTAL ALCOHOL FUNDS BUDGETED	$3,856,324	$3,698,492
Drug Program		
State Revenue	$ 227,905	$ 300,001
Federal Funds (all)	623,793	633,343
TOTAL DRUG FUNDS BUDGETED	$ 851,698	$ 933,344
TOTAL ADAD BUDGET	$4,708,022	$4,631,836

1) Based on estimated funds available to the ADAD and Galen as authorized by House Bill 627.
2) Based on estimates of funds available to counties as authorized by House Bill 627
3) Includes Federal Incentive Grant.
4) Amounts appropriated to ADAD and Galen from House Bill 483.
5) Based on funds available to counties as authorized by House Bill 844
6) Includes Federal Incentive Grant

TABLE 3 - Annual FY 1979 and 1980 Alcohol and Drug Abuse Program Budgets Administered by the Department of Institutions

Source. FY 80 State Plan.

Table 5 lists each of the detoxification, intermediate care and outpatient programs for each region (subarea) in the state. It also lists the city in which they are located, the number of clients served between October 1977 and September 1978, the proportion of these completing the program; and their 1978 projected budget. The completion rate is intended to be a measure of effectiveness of a program. The proportion of clients who receive the facility's full regimen of services cannot be compared from one program to another because the services differ from facility to facility. One would expect that the completion rate would be higher for a detoxification program than for a comprehensive program of intermediate care because of the longer time period involved.

Overall, it is estimated that the cost to treat an "average" alcoholic client is approximately $740.

Most of these programs are autonomous and operate informally with other facilities for services they do not provide directly. The Hill-Top Recovery Center (Havre) and District I, II and III (in Eastern Montana) have developed satellite offices and a network where all levels of services are available.

In June, 1980, the satellite system currently being coordinated by the Southwest Mental Health Center (Helena) will be phased out. These will probably be replaced by individual or multi-county programs.

The Alcohol and Drug Abuse Division is implementing, in January of 1980, a new reporting system which will provide selected measures of effectiveness for alcohol programs throughout the state. These statistics are to be based upon

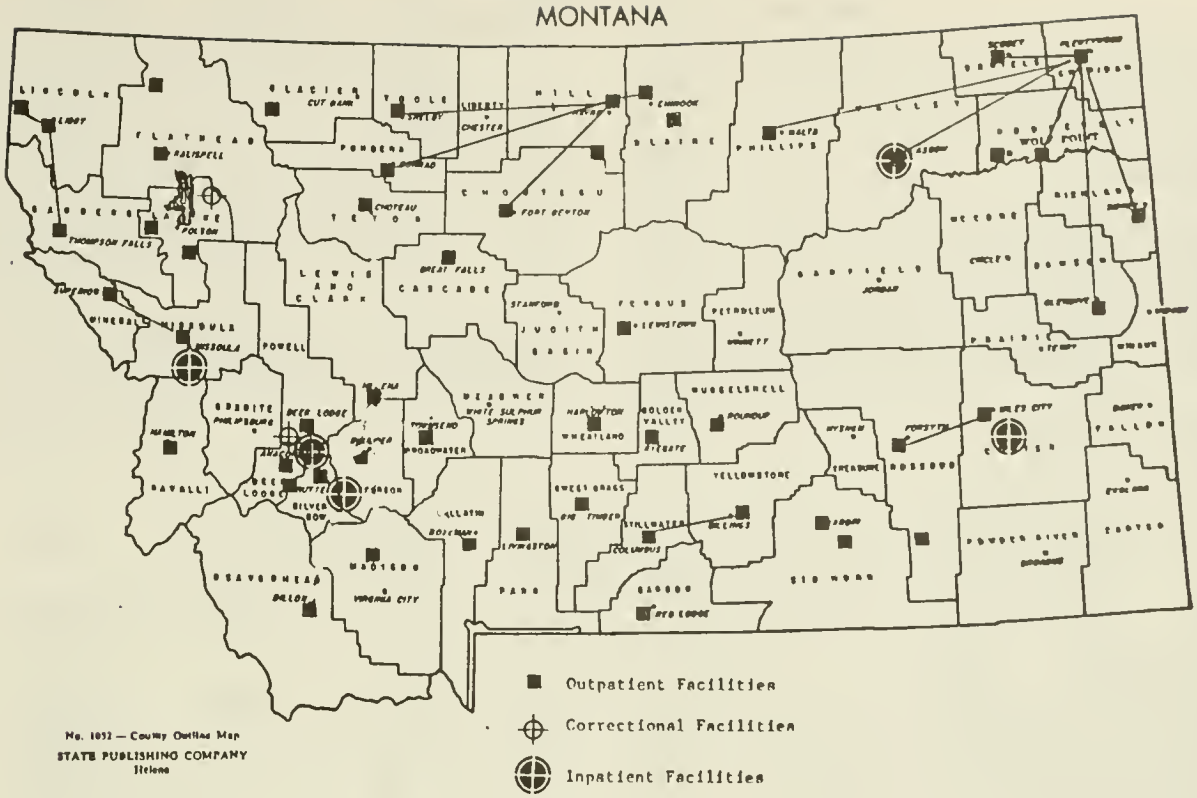


Figure 2 - Location of Montana Alcohol Services.

Name of Program	Number of Beds	Percent of Utilization (1975)	Clients Served	% Completing Program	Total Projected Budget FY 79
Francis Mahon Deaconess Hospital Chemical Dependency Program (Glasgow)	30	100%	456	75%	$ 410,863
Holy Rosary Hospital (Miles City)	15	50%	Not Available	---	321,000
Comp Care Silver Bow General Hospital (Butte)	18	75%[1]	274	64%	N/A
Galen State Hospital (Galen)	82	68%	1,785	52%	1,200,000
Missoula General (Missoula)	12	50-70%	105	51%	271,000

1) Personal communications with individual providers

2) 1978 Statistics based upon 400 admissions

3) Limited only to alcoholics, does not include their families who are also sometimes treated

Table 4 - Inpatient Alcohol Treatment
Number of Beds and Percent of Utilization of Those Beds in 1979

Program Name	City	Detox	Intermediate Care	Outpatient Care	Clients Served and Discharged Oct 77 - Sept 78	Completion Date (%)	1979 Federal Funds (Projected)	1979 Total Budget (Projected)
Region I (Eastern)								
District I	Plentywood			X	100	45%	$ -	$ 79,434
District II	Glendive			X	121	37%	-	72,270
Tri-County	Fallon			X	4	50%	-	25,504
Custer County	Liberty			X	58	22%	-	41,339
Rosebud County	Forsyth			X	17	6%	-	18,409
Subtotal					300		$ -	$236,956
Region II (North Central)								
Cascade County	Great Falls	X		X	103	71%	$ -	$137,750
Hill-Top	Havre	X	X	X	283	37%	38,148	210,881
Providence	Great Falls		X	X	394	31%	-	233,833
Medicine Pine Lodge	Browning			X	201	58%	104,905	127,891
Fort Belknap	Harlem		X	X	50	16%	94,082	103,508
Rocky Boy*	Box Elder			X	N/A	N/A	-	-
Subtotal					1031		$237,135	$813,863
Region III (South Central)								
Wheatland Family	Harlowton			X	1	100%	$ -	$ 29,981
Central Montana	Lewistown			X	57	14%	-	46,660
Sweet Grass County	Big Timber			X	1	0	-	18,990
South Central MHC	Billings			X	191	19%	20,000	62,000
Carbon County	Red Lodge			X	5	20%		22,375
Rimrock	Billings	X	X	X	523	51%	101,000	452,290
Big Horn	Hardin			X	2	0	-	43,922
Northern Cheyenne*	Lame Deer			X	67	61%	60,000	695,109
Subtotal					847		$181,000	$1,390,218
Region IV (Southwestern)								
Southwest Montana MHC	Helena			X	N/A	N/A	$127,065	$308,198
Lewis & Clark	Helena			X	72	14%	9,600	59,939
Powell County	Deer Lodge			X	27	22%	-	41,495
Butte Indian	Butte			X	29	3%	42,385	57,512
Silver Bow County	Butte			X	24	42%	-	96,000
Deer Lodge Co.	Anaconda			X	12	16%	-	36,920
Park County	Livingston			X	20	10%		45,256
Subtotal					184		$179,050	$645,120
Region V (Northwestern)								
Ravalli County	Hamilton			X	29	10%	$ -	$ 33,343
Lincoln County	Libby			X	112	44%	7,080	101,825
Sanders County	Thompson Falls			X	37	16%	-	30,345
*Alcohol Service Center	Kalispell			X	174	26%	-	175,241
Flathead Alcohol Center	Ronan	X	X	X	181	23%	282,000	307,600
Missoula Indian	Missoula		X	X	47	15%	67,500	88,045
RCEPD-Missoula	Missoula			X	61	10%	-	76,068
Subtotal					641		$ 356,580	$ 817,467
TOTAL					3003		$2,653,765	$3,898,824

1) Totals include inpatient facilities

* Not a state approved program

Table 5

Intermediate and Outpatient
Alcohol Programs, Federal Funding and Total Budgets

Source: FY 1980 Montana Comprehensive Plan for Alcohol and Drug Abuse Prevention, Treatment and Rehabilitation, and personal inquiry.

follow-up surveys of alcohol clients 180 days after discharge. They include such items as employment and educational status, income, housing stability and the amount of current substance usage.

Drug Services

Figure 3 and Table 6 show the programs specifically dedicated to drug abusers. All are drug-free programs, that is, treatment emphasis is on counseling. There are no maintenance programs where the patient is stabilized with methadone or other medications.

The two community drug programs serve South Central, Southwestern, and Missoula County in Northwestern Montana. The Southwestern Montana drug program maintains six satellite outpatient offices in the major cities in its area and contracts for 10 residential beds at the Galen Hospital for inpatient care.

Lighthouse is a state operated residential treatment facility located in Galen, Montana. Lighthouse is a component of Galen State Hospital, which is part of the Department of Institutions, Mental Health and Residential Services Division. Its catchment area constitutes the entire state.

The remaining three drug programs are located within the state's correctional facilities. These programs are funded through special grant monies from the Montana Board of Crime Control.

3.0 Future Resource Requirements

3.1 Alcohol Programs*

Table 7 indicates the regional priorities and needs as developed by the Alcohol and Drug Abuse Division working in concert with the local program people.

The alcohol treatment programs are currently serving about six percent of the alcoholic population in need of services. It is anticipated that this level will be maintained, but not appreciably increased in the next five years. The bulk of the alcohol program monies come from the state liquor tax and

individual counties now are responsible for the use of these funds for alcohol programs in their areas, subject to approval by the Alcohol and Drug Abuse Division.

The Alcohol and Drug Abuse Division has established a policy of using its discretionary monies to fund programs and counties that do not have sufficient operational funds to continue their program. In rural areas, priority will be given to multi-county programs. The intent of this policy is to support existing programs rather than establish new ones. It was the past Legislature's intent to limit the number of new alcohol programs.

Additional resources will be available in the future to provide services to special population groups (women, elderly, Indians, Youth and rural residents). Attempts will be made to implement the recommendations made by the Statewide Youth Task Force of 1977.

3.2 Drug Programs

The Alcohol and Drug Abuse Division intends to continue implementing the Federal Funding Criteria with a static caseload of four hundred (400) outpatient drug-free clients and ten residential drug-free clients. By operating at full capacity, requests for additional funding from the State Legislature may be justified as can the need for additional treatment slots.

ADAD has proposed in its statewide service grant application to obtain forty (40) additional outpatient drug-free treatment slots from National Institute for Drug Abuse for initiation of drug abuse services on the Flathead Indian Reservation. These slots would be contracted to the Flathead Reservation Comprehensive Alcohol Program for implementation of drug abuse services.

	Type of Services Provided		Number Clients Served (1978)	Client Capacity	Direct Costs	Percent Utilization	Cost/Patient
	Residential	Outpatient					
Southwestern Montana Drug Program			392	300	$537,111	79.5%	$1,370
- Helena		X	67	58	-	70.3%	-
- Butte		X	120	78	-	93.6%	-
- Anaconda		X	48	38	-	76.8%	-
- Missoula		X	82	58	-	86.0%	-
- Bozeman		X	75	68	-	67.1%	-
Lighthouse (Galen)	X		40	15	$138,590	162.2%	$3,465
Rimrock Foundation (Billings)		X	68	28	$ 49,950	143.0%	$ 735
Correctional Facilities			119	-	-	-	-
- Swan River			37	-	-	-	-
- Pine Hills			45	-	-	-	-
- Montana State Prison			37	-	-	-	-
			1130		$725,651	89.0%	$1,260

1) Funded by the Montana Board of Crime Control through the Alcohol and Drug Abuse Division, Department of Institutions

Table 6 - Program Characteristics of Drug Programs in Montana

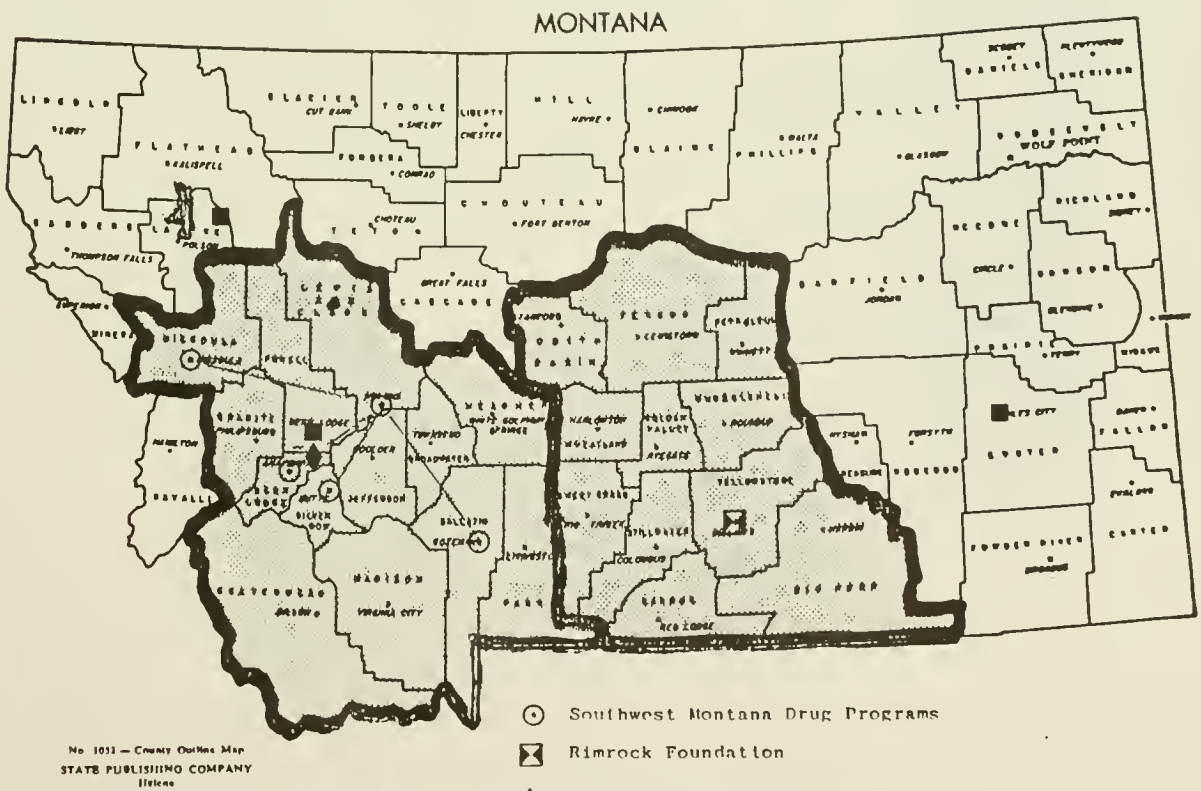


Figure 3 - Location of Montana Drug Programs

Perceived Need	REGION Eastern (I)	North Central (II)	South Central (III)	South-western (IV)	North-western (V)
Treatment					
Halfway houses	X	X		X	X
Additional staff	X			X	X
Stable funding	X			X	X
Miles City - fee for service	X				
Maintain existing services	X	X	X	X	X
Approval for Rocky Boy		X			
Sheltered care facility for women			X		
Non-medical detox				X	
Improved reimbursement for detox					X
Continuation of SMDP					X
Treatment services specific to women	X			X	X
Indian desk at ADAD					X
Funding for Indian programs			X	X	
Increased funding for Fort Peck	X				
Prevention					
Increased prevention material and resources	X	X	X	X	X
Implementation of curriculum	X		X	X	X
More ADAD leadership				X	X
Pilot 9th Judicial District Evaluation		X			
Prevention for special populations	X		X	X	X
Develop policy for schools	X				
Peer counseling	X				
Education of law enforcement personnel	X				
Administration					
Funding for sparsely populated counties by ADAD	X				
Statewide fee for service schedule by ADAD	X				
Adequate funding for existing programs	X	X	X	X	X
Non-duplication of services			X		
Third party reimbursement			X	X	X
Investigate city cash flow problems				X	X
Financial management training		X		X	X
Planning & Coordination					
More cooperation between social service agencies	X	X		X	
Certification	X	X	X	X	X
More cooperation between existing programs			X	X	X
Better referral relationships with Galen			X	X	X
More coordination with Vocational Rehabilitation & Job Service				X	X
Management Information Systems					
Consolidate report systems			X	X	X
More training	X	X	X	X	X
Add drug data to AIS			X	X	X
Reduce turn-around time	X		X		
Program effectiveness		X	X	X	
Research & Evaluation					
No needs					
Training					
Develop counseling skills in dealing with youth	X			X	
Prevention/education training	X			X	X
Treatment skills	X			X	
Administration skills	X			X	
Integrated training schedule		X			
Training funds		X			
Inservice training between programs			X		
Training integrated with certification standards			X	X	
Training for volunteers				X	
Law enforcement training				X	X
Program evaluation workshops				X	X
Criminal Justice Interface					
Clarification of referral and enforcement process	X			X	
Improve court school reimbursement				X	
Mandatory court school referral				X	
Training for law enforcement	X	X	X	X	X
Increase court school referrals in Great Falls		X			
Maintain court schools		X			
Improve communication and cooperation with law enforcement	X				
Training for DWI instructors	X				

Table 7 - Perceived State Alcohol Program Needs by Region

Source FY 80 State Plan

Drug Services

Figure 3 and Table 6 show the programs specifically dedicated to drug abusers. All are drug-free programs, that is, treatment emphasis is on counseling. There are no maintenance programs where the patient is stabilized with methadone or other medications.

The two community drug programs serve South Central, Southwestern, and Missoula County in Northwestern Montana. The Southwestern Montana drug program maintains six satellite outpatient offices in the major cities in its area and contracts for 10 residential beds at the Galen Hospital for inpatient care.

Lighthouse is a state operated residential treatment facility located in Galen, Montana. Lighthouse is a component of Galen State Hospital, which is part of the Department of Institutions, Mental Health and Residential Services Division. Its catchment area constitutes the entire state.

The remaining three drug programs are located within the state's correctional facilities. These programs are funded through special grant monies from the Montana Board of Crime Control.

3.0 Future Resource Requirements

3.1 Alcohol Programs

Table 7 indicates the regional priorities and needs as developed by the Alcohol and Drug Abuse Division working in concert with the local program people.

The alcohol treatment programs are currently serving about six percent of the alcoholic population in need of services. It is anticipated that this level will be maintained, but not appreciably increased in the next five years. The bulk of the alcohol program monies come from the state liquor tax and individual counties now are responsible for the use of these funds for alcohol programs in their areas, subject to approval by the Alcohol and Drug Abuse Division.

The Alcohol and Drug Abuse Division has established a policy of using its discretionary monies to fund programs and counties that do not have sufficient operational funds to continue their program. In rural areas, priority will be given to multi-county programs. The intent of this policy is to support existing programs rather than establish new ones. It was the past Legislature's intent to limit the number of new alcohol programs.

Additional resources will be available in the future to provide services to special population groups (women, elderly, Indians, Youth and rural residents). Attempts will be made to implement the recommendations made by the Statewide Youth Task Force of 1977.

3.2 Drug Programs

The Alcohol and Drug Abuse Division intends to continue implementing the Federal Funding Criteria with a static caseload of four hundred (400) outpatient drug-free clients and ten residential drug-free clients. By operating at full capacity, requests for additional funding from the State Legislature may be justified as can the need for additional treatment slots.

ADAD has proposed in its statewide service grant application to obtain forty (40) additional outpatient drug-free treatment slots from National Institute for Drug Abuse for initiation of drug abuse services on the Flathead Indian Reservation. These slots would be contracted to the Flathead Reservation Comprehensive Alcohol Program for implementation of drug abuse services.

4.8
SUMMARY
MENTAL HEALTH SERVICES

This component summarizes the State Mental Health Plan prepared by the Mental Health and Residential Facilities Division of the Department of Institutions. It also states MHSA recommendations toward the designation of Critical Psychiatric Shortage Areas and the future use of NHSC psychiatric personnel in the state.

The plan addresses the roles of the Department of Institutions, Regional Community Mental Health Centers, and the two state operated mental health facilities (Warm Springs State Hospital and the Center for the Aged).

Deinstitutionalization is still the major policy being implemented within the state's mental health network. One problem to be faced in the near future is the lack of stable funding for the comprehensive mental health centers. Three of the five centers are now operating under federal distress grants.

Deinstitutionalization has been effective in reducing the number of patients treated at Warm Springs State Hospital. Between 1976 and 1978 the average daily census dropped 32 percent and the licensed bed capacity was decreased by 50 percent. During the same period, utilization at the Center for the Aged increased 36 percent.

The state plan calls for a continued orderly development of the mental health network established in Montana. The only major expansion effort identified in the plan is the development of an intensive care home for 10 to 12 emotionally disturbed children in Great Falls in fiscal year 1980.

The plan calls for an increased emphasis to be placed upon consultation, public education and prevention activities.

The MHSA has recommended that Eastern Montana, the Eastern Montana Mental Health Center, the Lewistown area, Warm Springs State Hospital, and the Northwest Mental Health Center (Missoula) be designated as Critical Psychiatric Manpower Shortage Areas.

MENTAL HEALTH SERVICES

Goal:

Appropriate mental health services should be available to all Montanans.

Objectives:

1) By 1985, the Community Mental Health Centers, private practice mental health providers, Warm Springs State Hospital and local and county program activities should be coordinated into a mental health network to provide care and treatment for the mentally ill and to encourage efforts toward the prevention of mental illness.
2) By 1980, the Department of Institutions, Mental Health and Residential Services Division shall develop a comprehensive, fair, and adequate long-range funding formula to ensure the existence of mental health delivery services on the community level.
3) By 1985, mental health manpower within each of the 12 administrative districts of Montana shall be increased to include at least one psychiatrist and at least one-half the national per capita average of all mental health team members (psychiatrist, licensed psychologist, psychiatric social worker, psychiatric nurse, other support clinical workers).
4) By 1980, there will be a comprehensive plan for the training and education of Montanans in mental health manpower shortage areas.
5) By 1982, the Manpower Project of the Department of Institutions should improve coordination with both public and private agencies resulting in policy agreements impacting productivity, regulation, utilization, deployment, retention and evaluation of mental health personnel.
6) During Fiscal Year 1981 the Mental Health and Residential Services Division should develop quarterly and year-end reports on goal and objective achievements.
7) By 1981, there will be a comprehensive prevention plan available to all Montanans through satellite mental health centers which will include such modalities as parent effectiveness training, behavioral modification, community skills and stress in the environment.

Recommended Review Criteria:

1) Mental health professionals, licensed and/or certified, should be accessible to every Montanan.
2) Each county seat should have mental health services available at least once a week on a regularly scheduled basis.
3) Recipients of mental health services should have the opportunity to indicate acceptability or the lack of it.
4) Quality of mental health services shall be determined by outcome studies, process audits, and staff competence measures.
5) All admissions to Warm Springs State Hospital and other inpatient psychiatric units shall be screened for appropriateness.
6) No resident of Montana shall be denied needed mental health services.

1.0 Background

The purpose of this health plan component is to summarize the state plan for mental health services prepared by the Mental Health and Residential Facilities Division of the Department of Institutions and adopted by the State Health Coordinating Council (SHCC) on September 13, 1979. The use of this Health Systems Plan component will differ from the state plan in that the Montana Health Systems Agency will use the component to review mental health grants in the state and to establish MHSA policy toward the use of National Health Service Corps mental health personnel in the state.

The following programs are reviewable by the Montana Health Systems Agency:

- Mental Health — Community Mental Health Centers
- Mental Health — Hospital Staff Development Grants
- Mental Health — Hospital Improvement Grants
- Mental Health Training Grants
- Mental Health — Children's Services

IN FY 1978, $2,166,502 of federal funds were awarded under these programs to Mental Health Agencies in Montana.

On April 13, 1976, Governor Thomas L. Judge designated the Department of Institutions (DOI) as the single state authority for the administration and supervision of the Montana Mental Health Program. This authority is delegated to the Mental Health and Residential Facilities Division. In this capacity, the Division:

1. Maintains the authority and responsibility for preparation of the State Mental Health Services Plan.
2. Monitors achievements and objectives of mental health programs.
3. Monitors, for the Federal government, expenditures of Federal funds received for mental health administration and program operations.
4. Provides supervisory authority over the State's Residential Facilities — Boulder River School and Hospital, the Center for the Aged, Eastmont Training Center, Galen State Hospital, the Veterans' Home, and Warm Springs State Hospital. (Only Warm Springs State Hospital and the Center for the Aged are considered to be part of the Mental Health System and are addressed in the 1980 Plan.)
5. Provides liaison for continued deinstitutionalization through its community support unit within the Division.
6. Develops personnel training strategies to improve the Montana mental health system.

The Mental Health Division is assisted and advised on these tasks by the Governor's Advisory Council. The Council was appointed to conduct a thorough study of current and probable future problems, needs and opportunities the state of Montana will experience in the field of mental health in the next five years, and present its findings, conclusions and recommendations to the legislature and the Governor as mandated by a legislative resolution. The Council conducts two-day meetings every other month.

Besides the State Agency, the system of delivering mental health services has the following components:

- Psychiatrists and Psychologists in independent practice,
- The Five Regional Community Mental Health Centers,
- The Acute Care General hospitals (especially, the four with dedicated psychiatric units), and
- The two long-term state operated inpatient facilities (Warm Springs State Hospital and the Montana Center for the Aged).

The 1980 State Plan for Mental Health Services primarily addresses activities within the Division, Community Mental Health Centers and the two inpatient facilities. Psychiatric Manpower is addressed superficially, being limited to the Health Systems Agency's recommendations for the designation of Psychiatric Shortage Areas. Acute inpatient facilities for psychiatric patients has been addressed in a

separate component of this Plan.

Community Mental Health Centers were established following national legislation in 1965. Over the years, five regional centers evolved. All are private, non-profit corporations receiving federal funding through contracts from the Department of Institutions. All programs operate a network of satellite offices within their service areas. Each center is required to provide or arrange for the following services:

- Inpatient
- Outpatient
- Emergency
- Partial Hospitalization and Day Care
- Consultation and Education
- Children's Services
- Services for the Elderly
- Screening
- Follow-up Care
- Transitional Half-Way Houses
- Services for the Treatment and Prevention of Alcoholism
- Treatment and Prevention of Drug Addiction and Abuse
- Provision of Comprehensive Services to Minority Groups

The Community Mental Health Centers are the major recipients of patients discharged from state institutions since the deinstitutionalization program was implemented.

Warm Springs State Hospital was one of the major facilities affected by deinstitutionalization. In recent years, the role of the hospital changed in the following ways:

- Patient care is changing from custodial to therapeutic care.
- The concept of milieu therapy, emphasizing the early return of patients to the community whenever possible, is being utilized.
- Patient care is improving with the use of individualized patient treatment plans and frequent, regular utilization reviews.
- Improvements in preadmission screening and diagnostic evaluation is reducing inappropriate placement of persons with mental illness.

The **Center for the Aged** is a long-term, skilled and intermediate care facility owned and operated by the Department of Institutions. Its role is to provide an open campus, home-like environment to its residents. All residents must be referrals from Warm Springs or a mental health center, ambulatory and over 60 years of age.

2.0 Description of Current Situation

2.1 Incidence, Prevalence and Mortality

The relationship between the existence of mental disorders in the population and the need for mental health by individuals with these disorders has not been clearly established. In recent years a number of attempts have been made to assess the need for mental health services in populations directly through surveys. None of the survey instruments used, however, has gained general acceptance as "standard", because the studies using them have produced such vastly different results. For this reason, the proportion (percent) of the general population who need mental health services cannot be accurately determined.

The Mental Health Division of the Department of Institutions conducted a survey to identify "high-risk populations." This determination was based on weighted demographic, social and economic indicators in each region. These indicators are known to correlate with admission rates to mental health facilities. The indicators are:

- percent of males 16 years and over who are in a low occupation status
- percent of families below poverty level
- youth dependency ratio (persons under 18 years per 100 persons 18-64)
- Aged dependency ratio (persons 65 and over per 700 persons 18-64 years)
- percent of household population in housing units with 1.01 or more persons per room.
- percent of household population who moved into present residence (recent moves)
- Indian population as a percent of total catchment area population.

Table 1 shows these percentages, and based on these percentages, a ranking of needs by region. Using the summary score, Region I (Eastern) shows the greatest need for Mental Health Services, followed by Regions II (North Central), V (Northwest), III (South Central) and IV (Southwestern).

Regions	Males in Low Occupation Status %	Rank	Families Below Poverty Level	Rank	Youth Dependency Ratio %	Rank	1.01+ Persons Per Room %	Rank	Recent Movers %	Rank	Indian Population %	Rank	Overall Rank
I (Eastern)	30.8	5	15.1	1	19.8	1	21.7	1	23.7	5	6.9	2	1
II (North Central)	31.5	3	14.1	3	15.7	5	21.1	2	28.6	2	7.0	1	2
III (South Central)	31.3	4	14.3	2	17.5	4	17.1	5	25.6	4	3.8	3	4
IV (Southwestern)	35.6	2	11.8	5	19.4	2	17.6	4	27.2	3	0.9	5	5
V (Northwestern)	38.2	1	13.0	4	17.6	3	19.8	3	29	1	2.5	4	3

Table 1
Ranking of Regions by need for Mental Health Services

Source: Montana State Plan for Mental Health Services, Division of Mental Health and Residential Services

2.2 Current Inventory and Utilization Levels

Mental Health and Residential Facilities Division (DOI)

The FY operating costs for the Mental Health and Residential Services Division (DOI) is estimated to be $416,000. About six percent (6%) of this is obtained from state 314(d) federal money. In addition, the state requests five percent (5%) of all federal mental health facilities assistance funds received to assist in the administration of the state plan.

The Community Support Project is a unit within the Division to develop a statewide system of community based services for the severely mentally disordered adult. It has been funded for four years with federal and state monies. Last year the unit developed a demonstration model in the South Central Montana Mental Health Center for expanded and increased services to the chronically mentally ill. This year the model will be further refined and utilized in the Eastern Montana Mental Health Center.

The Manpower Development Unit was established upon receipt of the three-year federal grant from the National Institute of Mental Health. The award for FY 78 was $152,051. The mission of the project is to improve the ability of the Montana mental health system to respond to the state's mental health needs and problems. Since the initial funding of the Mental Health Manpower Project in July 1978, there has been a shift in emphasis from education and training as a primary focus to broad manpower policy planning effecting program and policy change. In March, 1979, the unit, in collaboration with the Rocky Mountain Gerontological Center (Salt Lake City) presented a three-day workshop on aging to interested professionals. This workshop will be conducted again in 1980 and 1981.

Private Practitioners

The number of psychiatrists currently practicing in Montana is shown in Figure 1 of Section 3.2 (Acute Psychiatric Units). These people have congregated in the major Montana towns. Various planning studies have indicated that a psychiatrist needs a population base of at least 10,000 persons to support a practice. Some studies, especially those dealing with HMOs, estimate that 50,000 persons are needed to support a psychiatrist.

The National Health Service Corps (NHSC) assists communities and areas designated as "psychiatric shortage areas" in recruiting and placing mental health personnel. Currently, a NHSC psychiatrist is located in Missoula and a psychiatric social worker in Lewistown. Missoula, Lewistown and Miles City have all been previous NHSC psychiatric sites.

At the present time, there is no current information on the number and location of psychologists and other mental health personnel in private practice across the state. The 1978 Montana State Plan identified the mental health work force and discussed projected personnel needs, problems, priorities and goals. The 1979 Plan presented a revised description of staff employed and personnel vacancies throughout the system.

Community Mental Health Centers

Figure 1 shows the geographic location of the comprehensive mental health centers, the satellite offices and the state mental hospital. Each of the five regions supports a comprehensive center with satellites. It also identifies those counties not currently participating in the Regional Mental Health Program.

Table 2 shows the 1978 utilization of the comprehensive centers by the number of people served, the estimated caseload of the center, the total funding received, and cost per client for the year 1978. The persons served is an unduplicated count of persons rather than contacts made. The caseload count indicates services on an ongoing basis rather than evaluations or emergency contacts. The funding figure is a compilation of federal, state, and county monies, income from client payments and funds in reserve.

Inpatient and Residential Facilities

Figure 2 shows the location of the Center for the Aged, the Acute Psychiatric Inpatient Units, the Residential Treatment Facilities and the Day Treatment Centers operating in the state. The latter two are operated in conjunction with the local Regional Mental Health Center. No utilization data is available for these facilities.

Table 3 shows recent utilization statistics for Warm Springs State Hospital and the Montana Center for the Aged. In the last three years (1976-1978), Warm Springs experienced a drop in its average daily census of 32 percent (from 647 patients in 1976 to 439 in 1978). At the same time, its licensed capacity has also been reduced. This has been attributed to the deinstitutionalization program undertaken by the state in 1975.

The utilization of the Center for the Aged has increased. The number of patients in this facility increased from 133 in 1976 to 181 in 1978. To accommodate this increase in patient load, the facility has expanded from 146 to 199 beds.

3.0 Estimated Future Resource Requirements

The State Mental Health Plan calls for a continued orderly development of a strong statewide network of mental health services. For the forseeable future, emphasis will continue to be on deinstitutionalization and on strengthening community services. To be able to do this, it is necessary to establish a stable funding base for the services being provided. In 1979, three of the five Community Mental Health Centers received federal distress grants because they are no longer eligible for regular mental health program funding.

One of the problems identified in the plan as being inconsistent with the deinstitutionalization policy is that courts seem reluctant to use mental health centers for preadmission screening and directly commit persons to Warm Springs for a 60-day court evaluation. The plan suggests that in many cases a community professional should perform an initial interview in order to determine if inpatient evaluation and treatment is warranted. To address this problem the Community Support Project is planning two statewide workshops this year to bring together judges, county attorneys and mental health clinicians to look at referrals made by the courts to mental health agencies and the services provided.

The state plan also recognizes a continued need to provide developmental and habilitation services to special population groups. These include the children, elderly and minorities.

The Community Mental Health Centers Act of 1975 stresses that a Regional Mental Health Center must devote a meaningful portion of its resources to addressing the needs of children. Services for children should include the full range of services made available by the center, appropriately geared to the needs of children at different stages of development. The plan recognizes a need for extensive coordination and collaboration with children's agencies and services throughout the state. The plan also calls for the development of an intensive care home for ten to twelve emotionally disturbed children in Great Falls during FY 80.

Many elderly patients are being deinstitutionalized. The Regional Mental Health Centers are responsible for their placement and treatment. This service has been funded by a contract between the Department of Institutions and the Regional Mental Health Centers. There are few formalized programs specifically for the elderly other than placing inappropriately housed patients from Warm Springs State

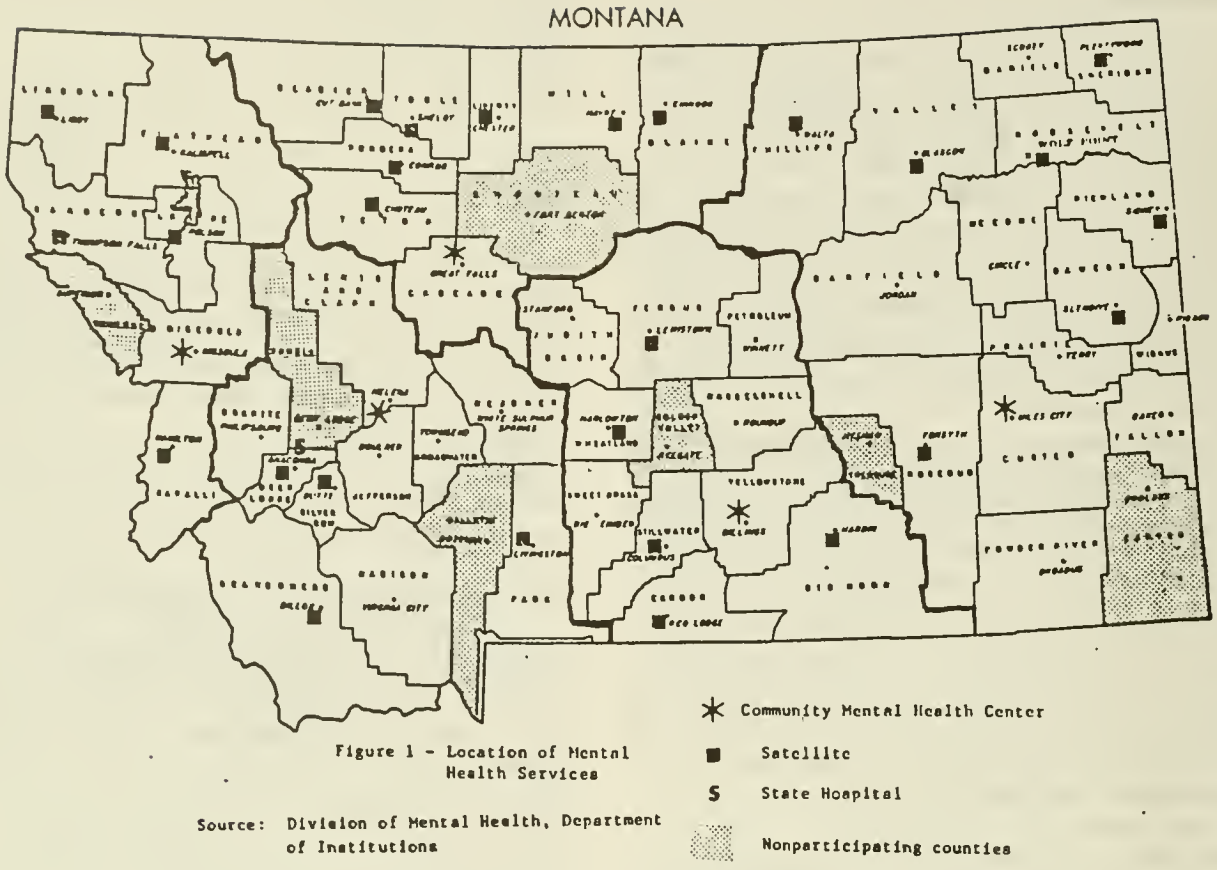


Figure 1 - Location of Mental Health Services

Source: Division of Mental Health, Department of Institutions

Region	Persons served	Caseload	Funding	Cost per Client
I (Eastern)	5,420	2,485	$ 867,982	$160
II (North Central)	5,704	1,615	1,359,872	238
III (South Central)	5,197	1,691	1,583,185	304
IV (Southwestern)	4,292	1,437	1,075,513	250
V (Northwestern)	4,472	843	774,041	173
Total	25,085	8,071	$5,660,593	$225 (average)

Table 2
Community Mental Health Centers Utilization

Source: Montana State Plan for Mental Health Services, Division of Mental Health and Residential Services

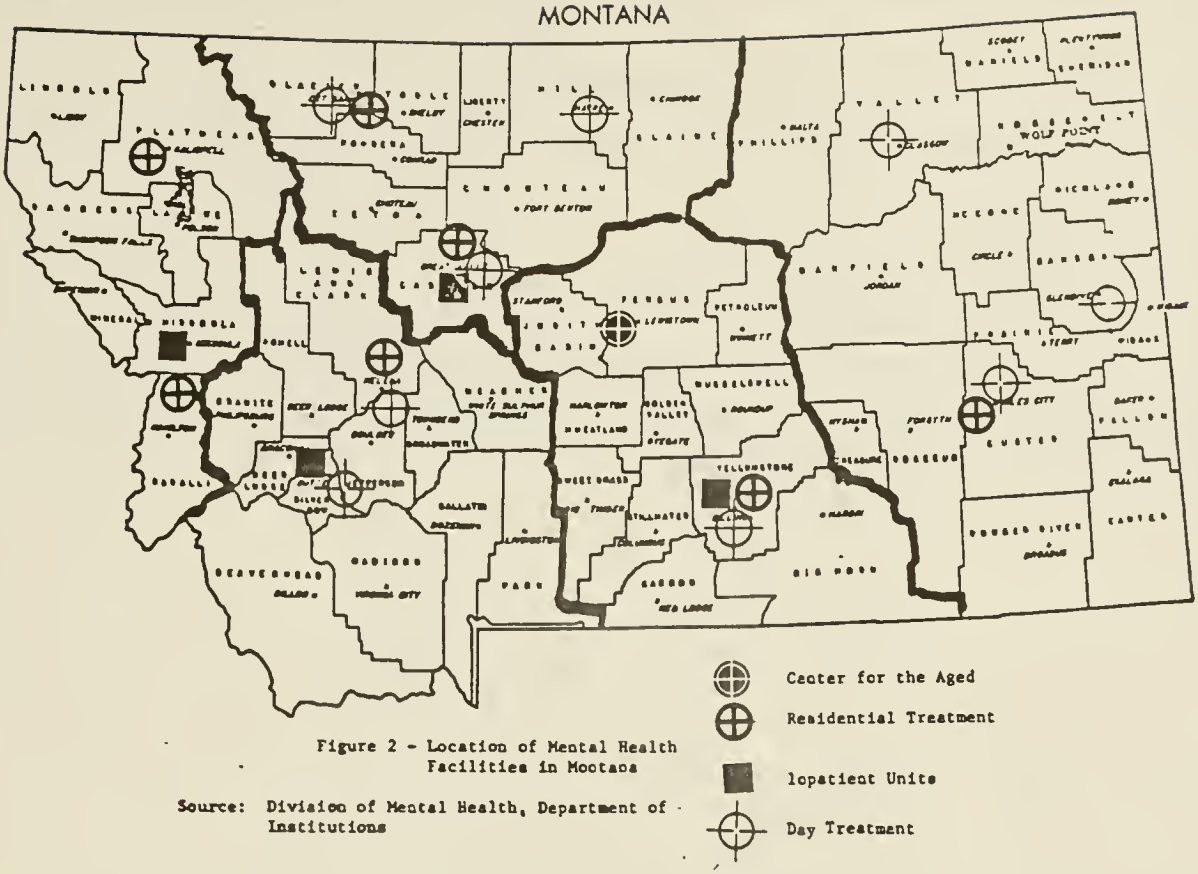


Figure 2 - Location of Mental Health Facilities in Montana

Source: Division of Mental Health, Department of Institutions

Institution and City	Year	Licensed Bed Capacity	Number Patient Days	Average Daily Census	Average Occupancy Rate (%)	Total Expenses	Estimated Cost/Day
Warm Springs	1976	1,099	235,989	647	59%	$ 6,733,431	$28.53
State Hospital	1977	N/A	N/A	N/A	N/A	N/A	N/A
(Warm Springs)	1978	516	160,171	439	85%	11,189,563	69.86
Montana Center	1976	146	48,684	133	91%	712,627	14.64
for the Aged	1977	199	56,897	156	78%	1,008,907	17.73
(Lewistown)	1978	199	66,171	181	91%	1,370,103	20.71

TABLE 3 - Selected Utilization Statistics for Warm Springs State Hospital and the Montana Center for the Aged (1976, 1977 and 1978)

Source: Unpublished data from Hospital Annual Reports.

Hospital into nursing homes, but most centers do provide transportation, include patients in day treatment, and consult with nursing homes.

The major minority group in Montana is Native American. There are seven Indian reservations. The Indian Health Service provides some mental health services on the reservations, but there is a need for more extensive services that will also cover off-reservation Indians.

The plan also calls for an increased emphasis on consultation, public education and prevention activities. Each Mental Health Center, within the year, is to assign consultation, education and outreach activities to a specific person. The plan requires the Mental Health and Residential Services Division to initiate statewide public information activities.

With respect to mental health manpower, the Manpower Development Unit within the Division of Mental Health and Residential Services intends to emphasize recruitment of paraprofessionals (line staff) to strengthen direct care services, rather than psychiatrists. The requirement for more paraprofessionals is a result of increasing demand on residential facilities as deinstitutionalization continues.

To assist in manpower recruitment and placement, the MHSA is recommending the following areas be designated as Psychiatric Shortage Areas:

- The entire Eastern Region
- The Eastern Mental Health Center (at Miles City)
- The Counties of Fergus, Petroleum, Judith Basin and Wheatland in Region III
- Warm Springs State Hospital
- The Northwestern Mental Health Center (in Missoula)

These areas are shown in Figure 3. To be eligible for designation, an area must have a psychiatrist to population ratio of 1 to 30,000. With the designation, the area is eligible for the placement of a National Health Service Corps (NHSC) Psychiatrist or other NHSC mental health worker. However, since only a total of 16 psychiatrists are expected to be placed nationwide in 1980, Montana should not see this as a long-range solution to the shortage of psychiatrists in the state.

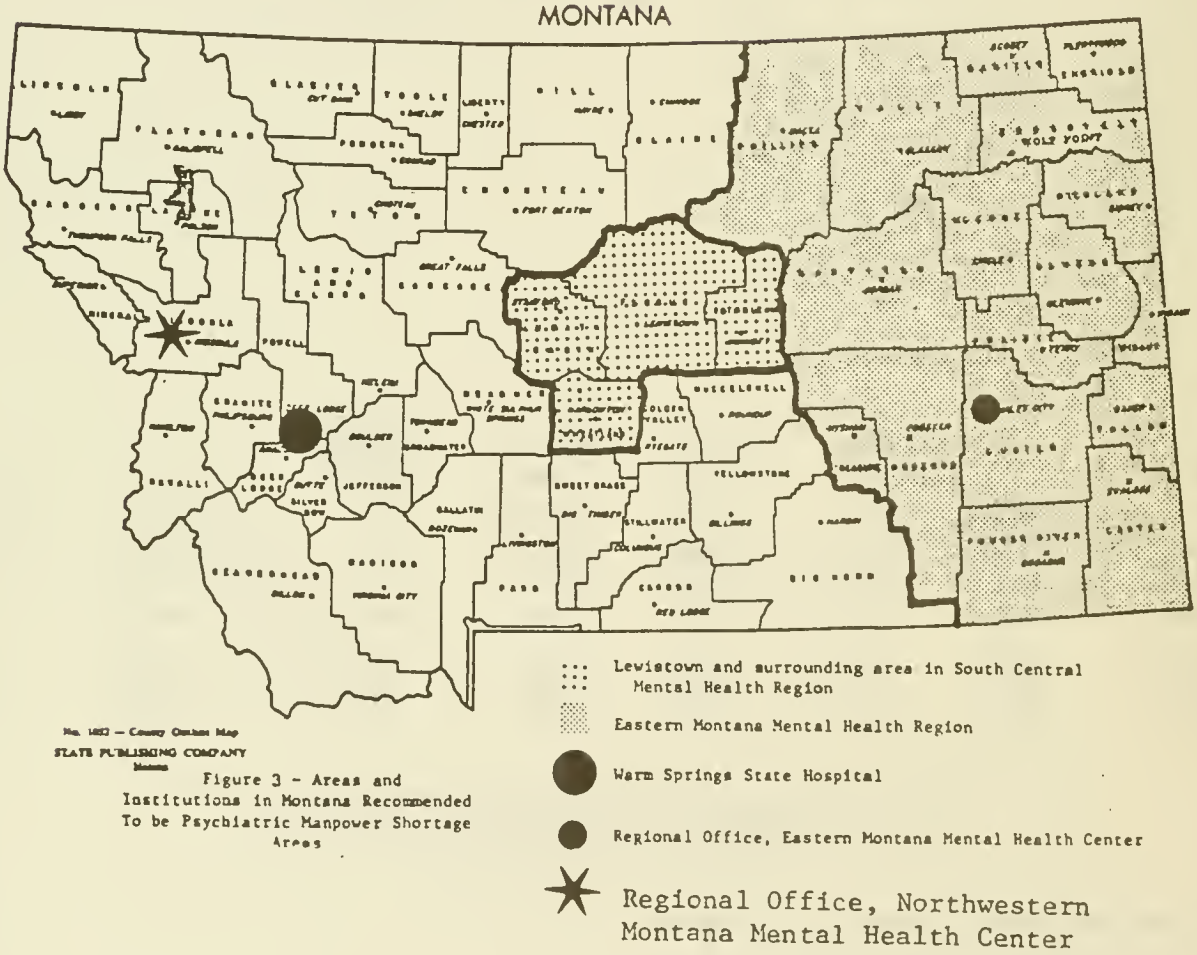

MONTANA
Lewistown and surrounding area in South Central Mental Health Region
Eastern Montana Mental Health Region
Warm Springs State Hospital
Regional Office, Eastern Montana Mental Health Center
Regional Office, Northwestern Montana Mental Health Center

Figure 3 - Areas and Institutions in Montana Recommended To be Psychiatric Manpower Shortage Areas

4.9
SUMMARY
COMPREHENSIVE REHABILITATION PROGRAMS

This component stresses the development of a coordinated system for the provision of rehabilitation services. Patients served by these rehabilitation programs include victims of stroke, paraplegia and quadriplegia, multiple sclerosis, muscular dystrophy, arthritis, amputation and head injuries.

Only those rehabilitation programs having two or more of the following characteristics are addressed in the component:

1. The program is under the supervision of a physiatrist or formally designated, full-time medical director.
2. The rehabilitation program is accredited by either the Commission on the Accreditation of Rehabilitation Facilities or the Joint Commission on the Accreditation of Hospitals.
3. The program has comprehensive, short-term rehabilitation beds.

It is recommended that the development of a rehabilitation program in Southwestern Montana be explored. There are currently comprehensive rehabilitation programs being developed in Missoula, Great Falls and Billings.

The Montana Health Systems Agency suggests that programs planning to have comprehensive, short-term rehabilitation beds should consider the guidelines for bed need as prescribed in the component. The recommended review criteria state that existing beds should be occupied at least 80 percent of the time. Standards for all rehabilitation programs should comply with the Commission on the Accreditation of Rehabilitation Facilities or the Joint Commission on the Accreditation of Hospitals.

COMPREHENSIVE REHABILITATION PROGRAMS

Goal:

The development of a coordinated system for the provision of rehabilitation services in Montana should be promoted. Missoula, Great Falls, and Billings are developing comprehensive rehabilitation programs to serve the State of Montana. Rehabilitation programs should provide comprehensive rehabilitation services to assure continuity of care.

Objectives:

The feasibility of developing a rehabilitation program in the Southwest service area should be explored. The cooperation of representatives from the existing rehabilitation programs (St. Vincent Hospital, Missoula Rehabilitation Center, and Montana Deaconess Medical Center) and the Montana Health Systems Agency should be solicited for the study.

Recommended Review Criteria:

1. The licensing of new or additional beds for a comprehensive rehabilitation program should be commensurate with the bed need estimates in section 3.1. Requests for more than the estimated number of beds must be justified according to the projected demand for rehabilitation services in the service area and high occupancy rates for any existing rehabilitation beds.
2. Before additional beds are dedicated to a rehabilitation program, the existing beds used for rehabilitation services should be occupied at least 80 percent of the time in the respective catchment area. An 80 percent occupancy rate should be documented for at least a three-month reporting period.
3. If a proposed rehabilitation program is requesting rehabilitation beds in an area already served by an existing program, that existing program should be operating at a minimum of 80 percent occupancy in their rehabilitation beds.
4. Any facility having or proposing to have licensed beds for comprehensive rehabilitation services should comply with either CARF (Commission on the Accreditation of Rehabilitation Facilities) or JCAH (Joint Commission on the Accreditation of Hospitals) standards for rehabilitation programs within the time periods permitted by the accrediting organization, in addition to the standards prescribed by the Montana Facilities Licensing and Certification Bureau.
5. Responsibility for medical direction or supervision of the rehabilitation programs/services should be vested in a physician member of the medical staff who, on the basis of training and experience, is knowledgeable in the rehabilitation services offered.
6. Any facility proposing to have licensed beds for a comprehensive rehabilitation program should have the following personnel on staff:
    1. medical director
    2. registered nurse with postgraduate training or experience in rehabilitative medicine
    3. physical therapist
    4. occupational therapist
    5. social worker
7. Any facility proposing to have licensed beds for a comprehensive rehabilitation program should have, but not be limited to, working arrangements for the services of the following professionals:

    Psychologist
    Radiologist
    Dietician
    Pharmacist
    Speech therapist
    Audiologist
    Prosthetist and/or orthotist
    Urologist
    Orthopaedist
    Cardiologist
    Neurosurgeon
    Neurologist
8. Agreements should be established between the facility offering the rehabilitation program and other agencies or organizations to provide any temporary living arrangements and/or home health care services to the rehabilitation patients and their families, if necessary.

1.0 Background

The Commission on the Accreditation of Rehabilitation Facilities, (CARF), defines a rehabilitation facility as "an organizational and physical entity in which a soundly based program of integrated and coordinated services are provided. These services are directed toward the physical, emotional, mental, social and vocational restoration and adjustment of handicapped, disabled children or adults."[1] Rehabilitation services typically consist of evaluation, treatment, education, counseling, training and placement, and are provided by personnel qualified in the various phases of the rehabilitation process.

Conceptually, a rehabilitation program represents a multitude of services coordinated through a central source. Realistically, no facility or program can provide all types of rehabilitation services. Consequently, programs are identified according to the service emphasis to be offered.[2]

For the purpose of the Montana Health Systems Plan, rehabilitation services are limited to the health and medical aspects of physical restoration. Furthermore, only those rehabilitation programs in Montana having two or more of the following characteristics are addressed:

1. the program is under the supervision of a physiatrist or formally designated, full-time medical director,
2. the rehabilitation program is accredited by the Commission on the Accreditation of Rehabilitation Facilities, or the standards prescribed for rehabilitation programs by the Joint Commission on the Accreditation of Hospitals.
3. the program has licensed, comprehensive, short-term rehabilitation beds. A short-term rehabilitation bed is occupied by a rehabilitation patient for a period of 45 to 90 days.

The primary objective of physical restoration services is to upgrade the physical functions of a patient. Patients under this category may include, but are not limited to, the physically disabled who are victims of stroke, paraplegia and quadriplegia, multiple sclerosis, muscular dystrophy, arthritis, amputation, and head injuries.

This component does not address rehabilitation as it relates to vocational education, sheltered employment, speech pathology, audiology, or related therapeutic services. Similarly, individual services such as physical therapy, occupational therapy, and other rehabilitation services offered within the institutional setting are not addressed. All hospitals and long-term care facilities are required by licensure to provide or contract for physical therapy services. Likewise, many of the home health agencies in Montana are licensed to provide some of these services.

Individuals needing medical rehabilitation services usually enter a rehabilitation program through physician referral. Once at the rehabilitation center, the rehabilitation process involves the same steps for each patient. First, the patient is evaluated and a prognosis is made as to his or her disability. A treatment plan is then recommended and the appropriate program is identified for selected patients having reasonable potential for rehabilitation. After each phase of treatment is completed, patient followup is initiated to assure the continuation of any services needed.

Usually, a rehabilitation program involves a cooperative arrangement between several facilities. Therapy can be administered in an outpatient facility, hospital, long-term care facility, or if possible, the patient's home. Although many rehabilitation services are provided in acute care hospitals or long-term care facilities, these services differ in a rehabilitation setting because of the intensity of treatment rendered to the patient. For example, the rehabilitation patient may receive one or two physical therapy treatments per day in the acute care hospital or long-term care facility compared to four to six hours of therapy per day in a rehabilitation facility, depending upon the patient's ability to tolerate therapy. As the rehabilitation patient progresses, he or she may be treated by the different groups involved in rehabilitation. For example, a stroke patient might initially be treated in an acute care center and then by a home health agency or an outpatient facility.

The personnel most often involved in the rehabilitation process include the physician, nurse, physical therapist, occupational therapist, prosthetist, orthotist, and a social worker. Other rehabilitation team members may include, but are not limited to, the speech pathologist, psychiatrist, psychologist, pre-vocational evaluator and the vocational counselor. Comprehensive rehabilitation care is delivered in an environment specifically designed and staffed to serve the disabled patient after he or she is medically stabilized.

A physiatrist is a medical specialist trained in the area of rehabilitative and physical medicine. A patient catchment area of approximately 100,000 people or more is generally needed to support a psysiatrist. In lieu of a physiatrist, the program can be directed by a neurologist, neurosurgeon, orthopedic surgeon, or a physician, who on the basis of training or experience is knowledgeable in rehabilitative medicine.

The physician evaluates the extent of the disability and its effect upon the patient's psychological, emotional and vocational functions. Working with the referring physician, the physiatrist or the rehabilitation medical director prescribes a program of treatment using the services and skills of all rehabilitation team members.[3]

The nurse is often the team coordinator and usually has special training in the area of rehabilitative medicine. The physical therapist provides exercise treatment programs, heat massage, hydrotherapy and pool therapy, gate training and ambulation services.

The occupational therapist is responsible for the restoration or improvement of a patient's physical endurance and coordination, and the development of adequate substitute skills when normal bodily functions cannot be restored, such as activities involved with everyday living; dressing, eating, and writing.

A prosthetist is a specialist in designing and replacing missing body parts with artificial ones. An orthotist, on the other hand, is a specialist concerned with orthopedic apparatuses used to support, align, prevent, or correct deformities or to improve the function of the movable body parts. The social worker coordinates the admission procedures, counsels the patient and family, provides casework services for patient adjustment to the handicap, offers financial counseling, and acts as the rehabilitation team liaison to other agencies involved with rehabilitation follow-up care. In addition, the social worker, along with the entire rehabilitation team staff, is responsible for discharge planning.

2.0 Current Status of Rehabilitation Services in Montana

2.1 Incidence and Prevalence

Table 1 estimates the incidence and prevalence of selected chronic conditions for Montana using available national statistics. These seven conditions represent the most frequently encountered physical disabilities which are treated in rehabilitation units.

Stroke victims are among the most common type of patients treated in a rehabilitation facility. Each year, an additional 800 Montanans have a stroke. Although strokes are the third leading cause of death in Montana, many victims survive their strokes with partial paralysis or speech impediments. Based on national statistics, it is estimated that there are currently 5,800 people in Montana who have had a stroke.

Based on national statistics, the number of paraplegics and quadriplegics in Montana is estimated to be around 373 and 224 people respectively. Estimates for Montana seem to suggest that approximately 450 paraplegics and quadriplegics presently exist. Most paralyses are the result of automobile accidents. Many paraplegics and quadriplegics are referred to out-of-state rehabilitation centers for the specialized treatment not available in Montana. Roughly 75 percent of the forty rehabilitation patients under the Rehabilitative Services Division of the Department of Social and Rehabilitative Services are referred to out-of-state centers. Most of these referrals are quadriplegics and paraplegics going to the Craig Center in Denver, the University of Utah Rehabilitation Center in Salt Lake City, or the University of Washington Rehabilitation Center in Seattle.

Multiple sclerosis is a crippling neurological disease mostly affecting individuals between 20 and 40 years of age.[4] It is frequently difficult to diagnose until the symptoms have progressed to the point of disability. Based on national statistics, an estimated 300 people in Montana are afflicted with this disease. The estimated number of multiple sclerosis victims may be understated. No statistics are available on the number of new diagnoses per year for this disease.

Muscular Dystrophy is a name given to a group of chronic, noncontagious progressive diseases characterized by the wasting and consequent weakness of the voluntary muscles. Nearly 70 percent of all the known muscular dystrophy patients in the United States are between the ages of three and 13.[5] Although the prevalence of muscular dystrophy is presently not reported and a nationwide census has never been attempted, the disease is estimated to affect nearly 200,000 people nationally. The Billings Muscular Dystrophy office estimates that there are approximately 200 muscular dystrophy patients in Montana at this time; of which 60 percent are adults.

One out of every ten Americans is afflicted with arthritis severe enough to require medical care. Arthritis and rheumatism are second only to heart disease as the most widespread chronic illness in the United States today.[6] The most crippling form of arthritis is rheumatoid arthritis affecting mostly the young and middle aged, those between 20 and 45 years of age. Rheumatoid arthritis is an inflammatory connective tissue disease that results in permanent joint deformities and other complications producing disability and chronic invalidism. Based on national statistics, nearly 63,000 people in Montana are arthritics, with an additional 6,000 people contracting some form of arthritis every year. However, not all arthritics warrant some type of rehabilitation services.

	Prevalence Per 100,000 (U.S.)[1]	Incidence Per 100,000 (U.S.)[2]	Estimated No. of people in Montana with the Affliction	Estimated New Cases Annually In Montana
Stroke[3]	754.9	105.8	5,745	805
Quadriplegia[4]	30.0	---	224	---
Paraplegia[4]	50.0	---	373	---
Multiple Sclerosis	44.3	---	337	---
Muscular Dystrophy	98.4[5]	---	748	---
Arthritis	9,024.6	846.9	68,677	6,445
Amputations[6]	134.8	---	1,026	---
Head Injuries[7]	---	---	1,927	---

[1]Prevalence represents the number of individuals with the disease or chronic condition at any given time per 100,000 population (1970 Census).

[2]Incidence represents the number of individuals in a given population getting the disease or chronic condition in a given time period. 1970 Census figures are used.

[3]Cerebrovascular disease statistics.

[4]**Vital and Health Statistics,** National Health Survey, National Center for Health Statistics, DHEW.

[5]Obtained from **The Killers and Cripplers, Facts on the Major Diseases in the U.S. Today,** National Health Education Committee p. 200.

[6]Absence of major extremities.

[7]Reported by the Department of Health and Environmental Sciences, EMS Bureau, 1977.

Table 1
Estimated Incidence and Prevalence
of Selected Chronic Conditions
U.S. and Montana

Source: U.S. Department of H.E.W., Public Health Service, Health Resources Administration, Prevalence of Chronic Conditions of the Genitourinary, Nervous, Endocrine, Metabolic, and Blood and Blood-Forming Systems and of Other Selected Chronic Conditions, 1973, pp. 18-19.

Although no statistics are available on the number of amputations occurring each year, it is estimated that there are approximately 900 amputees in Montana. Considering the hazardous occupations evident in Montana, such as the logging industry, farming and mining, the number of amputations generated yearly may be considerable. The successful rehabilitation of the amputee is highly dependent upon the early referral of the patient to a rehabilitation program.

The Emergency Medical Services Bureau of the Montana Department of Health and Environmental Sciences, reports that during 1977 approximately 1,927 people were treated in hospitals for head injuries. Most head injuries are the result of motor vehicle accidents. Of the 1,927 head injuries seen, about two percent resulted in death for the victim. A high percentage of severe head injury patients need intensive long-term, team rehabilitation.

Self-help groups for the disabled patient offer an important component in the comprehensive rehabilitation process. Physicians and other health care personnel should work with the respective societal and self-help groups during the rehabilitation of the patient.

It is not possible at this time to assess the number of rehabilitation patients seen by each facility. The data base varies for each facility in that inpatient and outpatient admissions are counted differently; for instance, some facilities only count inpatient admissions. An additional factor complicating patient data comparisons is that all three facilities are, in varying degrees, still developing their programs. The rehabilitation programs at St. Vincent Hospital in Billings and the Missoula Rehabilitation Program are expected to increase the volume of rehabilitation patients with the recruitment of the physiatrists at each facility.

The Health Systems Agency should work with representatives from all three facilities to develop a uniform data base on rehabilitation patient statistics. This data base should include:

- the number of rehabilitation treatments by diagnosis for both inpatient and outpatient care
- the number of inpatient and outpatient admissions
- the number of inpatient days
- out-of-state referrals for rehabilitative care

2.2 Rehabilitation Facilities in Montana

Two facilities in Montana presently have rehabilitation programs under the direction of a full-time medical director; St. Vincent Hospital in Billings and the Missoula Rehabilitation Center. Montana Deaconess Center has a CARF accredited program, but does not have a full-time medical director.

The rehabilitation program at St. Vincent Hospital is under the full-time supervision of a physiatrist and is presently licensed for eight rehabilitation beds. Table 2 lists the rehabilitation facilities along with the long-term care and home health agencies served. The services provided at each facility are depicted in Table 3.

The Missoula Rehabilitation Center offers rehabilitation services primarily on an outpatient basis. The Center is located next door to Missoula Community Hospital. Although the Center has working arrangements with both Missoula Community Hospital and Missoula Community Nursing Home, Missoula Community Hospital does not have designated rehabilitation beds. For bed stay patients, the Center uses 20 rehabilitation beds located in a designated wing of Missoula Community Nursing Home. Although these beds are licensed as long-term care beds, they are built and staff-

Rehabilitation Program	Full Time Medical Director	CARF[1] Accredited	JCAH[2] Accredited	Licensed Acute Care Beds Designated	Licensed Long-Term Care Beds Designated	Home Health Services
St. Vincent Hospital (Billings)	X		X	8 designated beds		
Missoula Rehabilitation Center (Missoula)	X	X			20 beds designated Missoula Com. Nursing Home	Missoula Rehabilitation Center
Montana Deaconess Medical Center (Great Falls)		X		12 designated beds	Montana Deaconess	Montana Deaconess

[1]Commission on the Accreditation of Rehabilitation Facilities

[2]Joint Commission on the Accreditation of Hospitals

Table 2
Comprehensive Rehabilitation Programs in Montana

Rehabilitation Services Provided	Rehabilitation Programs		
	St. Vincent Hospital	Missoula Rehabilitation Center	Montana Deaconess Medical Center
Vocation rehabilitation services/placement	X[1]	X	X
Rehabilitation nursing services[2]	X	X	X
Physical/occupational therapy and prosthetic training	X	X	X[3]
Speech therapy	X	X	X
Audiological services	X	X	X
Psychiatric counseling	X	X	X
Services for the amputee	X	X	
Post surgery services	X	X	
Social services	X	X	X

[1]Available June, 1979

[2]Registered Nurse with postgraduate training in rehabilitation

[3]Physical and Occupational Therapy only.

Table 3
Rehabilitation Services Provided Or
Contracted For, By Facility

ed to accommodate a patient needing comprehensive, short-term rehabilitation services. Amputee services and services to post-surgery patients are also offered. The program is accredited by CARF and utilizes the services of a physiatrist. The center provides physical, occupational, speech and hearing therapy, prosthetic training, psychiatric counseling, vocation evaluation and psycho-social aid for the patient. The center also maintains a crippled children's clinic and offers a teaching program in physical and occupational therapy for nurses as well as for the families and friends of the disabled. Rehabilitative services are also provided to local nursing homes and a home health agency.

The Missoula Rehabilitation Center has, during the past few years, been serving fewer children for rehabilitation care. This is attributable to a federal mandate requiring the school systems to contract and provide rehabilitation services to school-aged children.

Montana Deaconess Medical Center in Great Falls has a twelve bed rehabilitation unit and provides occupational therapy, speech and hearing therapy, physical therapy, and social services. Rehabilitation services are provided to the long-term care and home health patients from Deaconess. The program is accredited by the Commission on the Accreditation of Rehabilitation Facilities (CARF) and is under the direction of an orthopedic surgeon. Both inpatient and outpatient rehabilitation services are provided.

3.0 Plan For The Future

The following is a comparison of the number of rehabilitation beds available by Montana Health Systems Agency subarea and an estimation of the number of rehabilitation beds needed. Rehabilitation beds in long-term care facilities are not considered since these beds are typically used for medically stable patients who are expected to show little or no improvement. Comprehensive, short-term rehabilitation beds on the other hand involve a level of care requiring higher nurse-to-patient ratios and typically offer the comprehensive, interdisciplinary approach to rehabilitative care as addressed in this component. The average length of stay for a rehabilitation patient is between 45 and 90 days.

The bed need estimates are to serve as guidelines only for Certificate of Need reviews concerning the licensing of dedicated rehabilitation beds. In order for a rehabilitation program to offer comprehensive services and to be financially viable, acute care rehabilitation beds are considered necessary.

Before a facility dedicates additional rehabilitation beds, the existing rehabilitation beds should be occupied no less than 80 percent of the time.

Facilities wishing to develop a comprehensive rehabilitation program in an area which is presently unserved by such a program and planning to license rehabilitation beds, should consider the Health Systems Agency bed need estimates as guidelines in determining their bed need. If the facility's proposed catchment area is already served by an existing program, the existing program should be operating at a minimum of 80 percent occupancy in their rehabilitation beds.

These guidelines do not preclude a facility from developing a rehabilitation program if the licensing of rehabilitation beds is not planned.

3.1 Estimate of Service Need

The methodology used to estimate the need for rehabilitation beds is based on the following assumptions.

1. Medical/surgical admissions are assumed to account for 77 percent of total hospital admissions.
2. There will be five rehabilitation admissions per 1,000 general hospital medical/surgical admissions.
3. The average length of stay per admission is assumed to be 45 days.
4. The desired occupancy for rehabilitation beds is 80 percent.

It is further assumed that the 17 county Eastern Subarea would access the St. Vincent Rehabilitation Program as the need for comprehensive rehabilitation services arises.

Table 4 summarizes the projected bed need estimates by subarea using the above methodology and relates the estimated bed need to the number of rehabilitation beds available in each of the subareas. It appears that each service area should have no more than 20 licensed beds for a rehabilitation program, with the exception of the South Central/Eastern service areas.

REFERENCES

1. Standards Manual for Rehabilitation Facilities, 1976, Commission on Accreditation of Rehabilitation Facilities, p. 7.
2. Op. Cit., p. 7.
3. University of Utah Rehabilitation Center, Salt Lake City, Utah.
4. **The Killers and Cripplers, Facts on the Major Diseases in the United States Today**, National Health Education Committee, 1976, p. 185.
5. Op. Cit., p. 200.
6. Chronic Conditions Causing Activity Limitation, U.S. 1969-1970. U.S. Department of H.E.W., Washington, D.C.
7. John Steinle and Associates, and MHSA Task Force input on April 25, 1979.

Subarea (Service Area)	Total Medical/ Surgical Admissions in 1977	Expected Adult Rehab. Admissions	Rehab. Patient Days	Average Daily Census	Beds Needed	Rehab. Beds Available	Deficit (Surplus)
Northwest	25,638	128	5,760	15.8	20	20	0
North Central	26,195	131	5,895	16.2	20	12	8
Southwest	23,767	119	5,355	14.7	18	0	18
South Central/ Eastern	30,234	151	6,795	18.6	23	8	15
State Total	105,834	529	23,805	65.3	81	40	41

[1]Missoula Community Nursing Home recently designated a 20-bed rehabilitation wing specifically designed for patients from the Missoula Rehabilitation Center. This facility opened April 30, 1979. It is assumed that these beds fulfill the need for rehabilitation beds in the Missoula area.

Table 4
Rehabilitation Bed Need
Estimates and Beds
Available, by Subarea

CHAPTER 5
PRIMARY CARE SERVICES

Primary care is the type of health care with which most people are familiar. It is usually a person's entry point into the delivery system. It focuses on ambulatory care and those services requiring frequent utilization, such as routine preventive care, diagnosis and treatment of minor physical and mental illnesses.

In this plan, three different components of primary care are discussed. These are:

- Primary Health Care Personnel
- Dental Health Care Personnel
- Emergency Medical System

The first two are basically manpower studies with emphasis on educational programs and establishing MHSA policy on the potential use of National Health Corps Personnel in Montana. The latter is a service which is subject to MHSA review.

Table 1 shows the general categories of service incorporated in these primary care elements and the settings in which they are found. None of these components are addressed in the National Guidelines.

The Primary care services are typically found in an ambulatory setting. Emergency Medical Services also have a mobile component (ambulances) and a short-stay component (hospital emergency rooms). The methods of dispatching these services can be classified as free-standing if law enforcement or other public agencies are used. If quick response units are set up, they may be classified as community based.

SERVICE	Primary Health Care Personnel	Dental Personnel	Emergency Medical Services
Categories of Service			
Community Health Promotion	X	X	X
Prevention & Detection	X	X	X
Diagnosis & Treatment	X	X	X
Habilitation & Rehabilitation	X	X	
Maintenance Services	X	X	
Support Services			
Enabling Services			
Settings			
Community			X
Home			
Mobile			X
Ambulatory	X	X	X
Short-Stay			X
Long-Stay			
Free Standing Support			X

Table 1

Subjects, categories of service, and settings addressed in the Primary Care Service components.

5.1
SUMMARY
PRIMARY HEALTH CARE PERSONNEL

This component estimates the state's future needs for primary health care personnel, examines the current problems and develops a strategy for alleviating those problems. Geographic maldistribution and specialty maldistribution are discussed as primary health care problems. Three types of professionals, physicians, osteopaths and nurses, are included in the analysis.

Ten counties are listed as having critical manpower shortages. This was concluded by using the population to physician ratio of 3500:1. These counties may qualify for special federal programs (NHSC, RHI, HURA) if other indications of need are significant.

In order to assure residents statewide of reasonable access to quality primary care, the MHSA goal, the following population to physician levels should be attained:

General Practitioner (GP)	2,500:1
Internist	10,000:1
Pediatrician	10,000:1
Obstetrician and Gynecologist (Ob/Gyn)	10,000:1

The state averages are currently as follows:

General Practitioner	2,444:1
Internist	5,604:1
Pediatrician	13,527:1
Obstetrician and Gynecologist	12,453:1

Eastern Montana currently has the largest need for primary care personnel. Strategies must be found and implemented to address this problem.

The MHSA recommends continued support for WICHE and WAMI*, and the phased-in development of three family practice residency programs and programs for primary care education of nurses. The liberal policy toward the designation of critical manpower shortage areas and the recruitment of National Health Service Corps personnel should be supported with the following conditions: broad based community support, emphasis on family practitioners and restrictions of placements to actual shortage areas.

*Identified in component

PRIMARY HEALTH CARE PERSONNEL

GOAL

These guidelines are to assure that the residents of Montana have reasonable access to quality primary health care. On a statewide level, the following population to physician levels should be attained:

- General/Family Practitioner for every 2,500 persons
- Internist for every 10,000 persons
- Pediatrician for every 10,000 persons
- Obstetrician and Gynecologist for every 10,000 persons

The currently observed ratios for these primary care physicians are shown in Table 1.

Area	GP/FP	Int. Med.	Ped.	Ob/Gyn.
Northwestern	2,513	4,597	8,976	8,921
North Central	3,328	6,379	15,310	11,776
Southwestern	1,919	6,206	13,300	15,516
South Central	2,766	4,150	14,336	9,856
Eastern	2,154	14,157	49,550	33,033
STATE RATIO	2,444	5,604	13,527	12,453

TABLE 1 - Current Ratio of Population per Primary Care Physician in Each Subarea

OBJECTIVES

In concert with this goal, the following objectives have been established:

1) By 1985, every county of over 2,000 persons should have at least one general/family physician.

2) By 1985, each community of over 5,000 population and serving a catchment area of at least 10,000 people should have at least one general internist, pediatrician and obstetrician/gynecologist.

3) The use of cooperative and supervised practices, limited to a one-to-one basis, between physicians, nurse practitioners, and other primary health care personnel in primary care settings should be encouraged.

LONG RANGE ACTIONS

It appears that a combination of five manpower strategies should be followed to attract primary care manpower, especially family practitioners, to the underserved rural areas of the state. They are:

1) Continue to support both the WICHE and WAMI programs for educating Montana students. These programs should be evaluated biannually to see if they are assisting in resolving Montana's medical manpower problems. (Cost - $1.8 million/year.)

2) Support the phased-in development of three family practice residency programs in Montana. When fully operational, the programs could provide the state with as many as nine family practice physicians a year. (Cost-$1,350,000 a year if all three are fully operational.)

3) Support new and existing Montana programs for educating nurses in the specialty of primary care.

4) Support a liberal policy toward the designation of critical manpower shortage areas and the recruitment of National Health Service Corps personnel with the following conditions:

   a) Any new areas wishing critical manpower shortage area designations must show broad based community support (i.e., requests from county commissioners, requests from local medical associations or community petition).

   b) Emphasis should be placed on family practitioners who have completed residency training programs.

   c) Placement should be restricted to actual shortage areas.

   (Cost - $280,000 per year assuming eight NHSC physicians can be placed.)

5) Support the recruitment of primary care physicians and nurses by Rural Health Initiative Programs.

1.0 Background

The purpose of this component is to estimate the state's future needs for primary health care personnel, examine the current problems and develop strategies for alleviating these problems. Overall, the primary health care manpower problems can be divided into two groups — geographical maldistribution and specialty maldistribution. Geographical maldistribution means that providers are not located in the areas where they are most needed. Specialty maldistribution means there are not sufficient numbers of personnel in general practice, family practice and the primary care specialties. Of course, these two problems are interrelated.

Primary health care is defined as: a) the care the consumer receives at the point of contact with the health care system;

and b) the continued care of the individual as an ambulatory consumer. The care includes a) the identification, management and/or referral of health problems, and b) the maintenance of the consumer's health by means of preventive and promotive health care actions.

In addressing primary health care personnel, three different types of health professionals are included:

- Physicians (Doctors of Medicine)
- Osteopaths (Doctors of Osteopathy)
- Nurse Practitioners

As defined by the Medical Practice Act, the practice of medicine means the "diagnosis, treatment, or correction of, or the attempt to, or the holding of oneself out as being able to diagnose, treat, or correct human conditions, ailments, diseases, injuries, or infirmities, whether physical or mental, by any means, method, devices, or instrumentalities."[1]

Physicians are licensed through a board of medical examiners consisting of seven members. Before granting a physician's certificate to practice medicine the board requires that the applicant be a citizen of the United States; be of good moral character; be a graduate of an approved medical school; has completed, or has had experience or training equivalent to, a one year internship; and passes an examination administered by the board.

Osteopaths (D.O.'s) are graduates of Osteopathic schools and in most states are licensed separately from Medical Doctors. For several years, Montana restricted a D.O.'s practice to prescribing drugs and performing surgery. However, in 1973 the law was amended to grant full practice rights (i.e., the same as those granted to M.D.'s) for D.O.'s who graduated since 1955 and passed the FLEX examination (an examination given to graduates of foreign medical schools before they can be licensed).

In this component, emphasis is being placed upon primary care physicians. Primary care physicians are a subgroup of all physicians. Although many definitions are used to identify these physicians, this document will use one employed by the Department of Health, Education, and Welfare which indicates a primary care physician is one who practices in one of the four major primary care specialties — general or family practice, general internal medicine, general pediatrics and obstetrics and gynecology.[2]

The definition of a Nurse Practitioner, according to the American Nurses Association Council of Primary Health Care Nurse Practitioners, states:

The nurse practitioner is an R.N. who is a primary health care provider directly responsible and accountable to the consumer, and who is prepared through a formal organized educational program to coordinate and deliver comprehensive, continuous, personalized care.

The nurse practitioner already possesses a license to practice nursing and is legally liable for his/her own practice. The law does not place the registered nurse under the direct supervision of any other health discipline. Nursing's relationship with medicine must of necessity be one of collaboration, consultation, and referral if comprehensive care is to be provided.

We quote the definition of the practice of professional nursing from Montana Law 66-1222 (3)(a), RCM 1946:

"The practice of professional nursing means the performance for compensation of any act in the observation, care and counsel of the ill, injured or infirm, or in the maintenance of health or prevention of illness of others, or in the supervision and teaching of other personnel, or as prescribed by a person licensed in this state to prescribe such medications and treatments, requiring substantial specialized judgement and skill and based on knowledge and application of the principles of biological, physical and social science."

Another personnel category, the physician assistants, is not addressed in this document. Physician assistants are not legally recognized in this state according to the Attorney General's opinion of August 28, 1975.[3] Furthermore, there does not appear to be any wide support to legalize physicians assistants in this state.

2.0 Description of the Current Situation

2.1 Physicians

The increase in the number of physicians practicing in Montana between 1960 and 1974 is shown in Table 2. Overall, the number of physicians has increased during this period, however, the number of primary care physicians decreased. The distribution of physicians within these groups and the population to physician ratios indicate the same conclusions — a trend toward increased specialization.

During the past five years, Montana has licensed 53 new physicians a year. An examination of these newly licensed physicians shows the following statistics:

- Between 60 and 70 percent of the physicians licensed during this period are practicing in Montana.
- The number of newly licensed physicians has increased almost every year. The number licensed in 1977 is approximately double that observed in 1973.
- Between 20 and 30 percent of the newly licensed physicians practicing in Montana are general or family practitioners. Between 20 and 33 percent are primary care specialists (internists, pediatricians, and ob/gyns).
- About three percent of the physicians licensed during this period practiced in Eastern Montana.

Table 3 shows the number of active physicians in 1979, the overall population to physician ratio, the number of general and family practitioners, the number of other primary care specialists, and the population to primary care physician ratios by subarea. The latter ratio is a basic criterion to determine whether or not the area can qualify as a critical medical manpower shortage area and is, therefore, eligible for National Health Service Corps (NHSC) physicians.

Table 3 illustrates the maldistribution of physicians in Montana. The rural counties have a substantially higher population to physician ratio. The physicians in these counties are also more likely to be family practitioners. Many counties, especially in Eastern and South Central Montana, have only one or two physicians. In recent years, four hospitals in these small communities have been threatened with closure because of the loss of their only physician. Roundup (South Central) had to close its hospital (but is now open); Baker (Eastern) lost its only physician but attracted two others after a great deal of publicity; Philipsburg (Southwestern) and Jordan (Eastern) are currently threatened with closure for the same reason. One of the goals of this plan is to develop a strategy to bring more medical coverage stability to these rural areas.

In Montana, most of the Osteopaths (D.O.'s) can be considered general practitioners. Nineteen D.O.'s maintain an active license, but only seven have graduated since 1955, taken the FLEX examination and have full practice rights in Montana.[5,6] Five of these are federal employees — three at the USAF hospital at Malmstrom Air Force Base, Great Falls; one with the Indian Health Service, and one with the National Health Service Corps. The NHSC D.O. and the two D.O.'s with full practice rights are included in the figures in Table 3. It appears, however, that many small hospitals in Montana have overlooked the possibility of recruiting Osteopaths when searching for a physician for their communities.

	Specialty Grouping	Year 1960	1965	1969	1974	1979
Number Physicians	All Direct Patient Care	593	625	660	692	763
	General/Family Practice	236[1]	276	249	218	321
	Primary Care[2] Specialists	199	184	206	209	261
	Non Primary Care	152	165	204	257	181
	Unknown	6	—	1	8	—
%	All Direct Patient Care	100%	100%	100%	100%	100%
	General/Family Practice	39.8%[1]	44.2%	37.7%	31.5%	42%
	Primary Care[2] Specialists	33.6%	29.4%	31.2%	30.2%	34.2%
	Non Primary Care	25.6%	26.4%	30.9%	37.1%	23.7%
	Unknown	1.0%	—	0.2%	1.2%	—
Population to Physician Ratio	All Direct Patient Care	1138	1123	1051	1062	1028
	General/Family Practice	2860[1]	2557	2787	3372	2444
	Primary Care[2] Specialists	3391	3837	2787	3517	3006
	Non Primary Care	4441	4279	3401	3860	4334

1) The increase in the number and proportion of General and Family Practitioners between 1960 and 1965 was due almost entirely to a change in specialty designation by some physicians from General Surgery to General Practice.

2) In the original study, primary care specialists included General Internists, Pediatricians, OB/GYN and General Surgeons.

Table 2

Number of Physicians in Direct Patient Care in Montana, Distribution of Specialty Groupings, and Population to Physician Ratios for Selected Years

SOURCE: Lawrence, D. & D. Cherkin, "The Physician Manpower Experience in Washington, Alaska, Montana and Idaho, 1960-1974," Department of Health Services School of Public Health & Community Health, University of Washington, Seattle, Washington, July, 1973.

It should be noted that the median age of Montana physicians is not significantly different from national figures and has dropped somewhat since 1960. The average age of physicians in Montana is 45.9 years; the national average age in 1973 was 45 years. In 1960 the average age in Montana was 47.0 years. A ten percent sample of the general and family practitioners indicates that they are somewhat older — 49.6 years. Consequently, it appears that age, in general, is not a big concern in planning for Montana's future physician needs. It does become important, however, when the individual community's only physician is in his/her sixties.

The primary care specialists (Internists, Pediatricians, and Ob/Gyns) are, for the most part, located in the larger cities. One reason for this is that they need a larger population base to maintain their specialty practices. Since this data was compiled, Miles City (Custer County in Eastern Montana) has lost its Pediatrician and Ob/Gyn physicians and has not been able to recruit replacements. This leaves almost all the Eastern Sub-area without primary specialty care.

The distribution of non-primary care physicians by subarea is presented in Table 4. Again, these physicians are primarily located in the population centers due to the nature of their practices. General Surgeons are the most commonly found specialists in the smaller communities. In many of the rural areas, the surgeons staff more than one hospital in the region to give more accessibility to the population. Similarly, the pathologists and radiologists in the rural areas have contracts to serve several hospitals.

2.2 Physician Education Programs in Montana

Montana, having no medical school located within its borders, is at a disadvantage when trying to develop manpower policies to redistribute physician resources. In an effort to supply the state with physicians and give Montana students an equal educational opportunity to get into medical school, the state has participated in two educational programs - the WICHE (Western Interstate Commission for Higher Education) Student Exchange Program and the WAMI (Washington, Alaska, Montana, and Idaho) Program.

The WICHE Student Exchange Program is designed to increase and improve the opportunities of Western state students to continue their education in professional fields. While a student's WICHE certification will not guarantee his acceptance into a receiving medical school, he/she is given preference over other out-of-state applicants. Under this arrangement, the state's obligation is to pay a prearranged amount for each student which is approximately equal to the school's out-of-state tuition.

Montana has been participating in the WICHE Program

Subarea	County	Number Active Non-Federal Physicians	1978 Pop. Per Physician	Number Active General Practice (Family Practice) Physicians	Internal Medicine	Pediatrics	OB/GYN	1978 Pop. Per Primary Care Physician
North-Western	Lincoln	15	1140	10	1	1	—	1425
	Flathead	78	641	28	7	5	5	1111
	Sanders	5	1160	4				2125
	Lake	20	915	8	1	2	2	1407
	Mineral	4	950	3	—	—	—	1266
	Ravalli	9	2344	4	2	1	—	3014
	Missoula	168	414	18	30	12	12	968
SUBTOTAL		299	630	75	41	21	19	1208
North Central	Glacier	12	950	8	1	1	—	1140
	Toole	3	1800	2				2700
	Pondera	6	1200	3				2400
	Teton	7	957	4	1			1675
	Cascade	149	579	16	19	8	12	1570
	Chouteau	2	3500	2				3500
	Hill	24	791	8	3	1	1	1461
	Blaine	3	2500	2				3750
	Liberty	2	1250	1				2500
SUBTOTAL		208	736	46	24	10	13	1646
South-Western	Beaverhead	7	1228	4				2150
	Madison	4	1475	3				1966
	Gallatin	67	600	28	4	3	5	1005
	Lewis & Clark	92	445	22	16	8	4	820
	Broadwater	3	1133	3				1133
	Jefferson	6	1266	4	1			1520
	Meagher	1	2400	1				2400
	Silver Bow	57	698	9	8	3	2	1809
	Deer Lodge	22	631	9				1544
	Powell	9	844	7				1085
	Granite	1	2800	1				2800
	Park	13	1000	6	1		1	1625
SUBTOTAL		282	660	97	30	14	12	1216
South Central	Fergus	16	837	9				1488
	Petroleum	—	—	—	—	—	—	—
	Judith Basin	—	—	—	—	—	—	—
	Wheatland	2	1200	2			1	800
	Golden Valley	—	—	—	—	—	—	—
	Musselshell	2	2400	2				2400
	Sweet Grass	3	1066	2			1	1066
	Stillwater	3	1966	3				1966
	Carbon	5	1700	5				1700
	Big Horn	7	1542	5				2160
	Yellowstone	197	527	29	38	11	14	1130
SUBTOTAL		235	671	57	38	11	16	1292
Eastern	Valley	11	1100	5	1			2016
	Daniels	2	1500	2				1500
	Sheridan	2	2600	2				2600
	Roosevelt	9	1188	7				1528
	McCone	1	2700	1				2700
	Garfield	1	1800	1				1800
	Richland	12	900	7	1			1350
	Dawson	9	1266	4	2	1		1628
	Wibaux	—	—	—	—	—	—	—
	Rosebud	8	1212	7				1385
	Treasure	—	—	—	—	—	—	—
	Powder River	2	1250	2				1250
	Custer	24	550	2	3	1	3	1466
	Prairie	1	1900	1				1900
	Phillips	2	2700	2				2700
	Fallon	3	1333	2				2000
	Carter	2	950	1				1900
SUBTOTAL		89	1113	46	7	2	3	1708
State Total		1113	398	321	140	58	63	1348

Source: Health Data Book, Montana Department of Health & Environmental Sciences, 1979.

Table 3
Active Physicians and Primary Care Specialists in Montana by Subarea.
1979

Specialty	Montana	Eastern	North Central	North-western	South Central	South-western
Ophthalmology	42	1	10	10	11	10
Pathology	38	4	7	9	8	10
Psychiatry	42	1	10	10	7	14
Radiology	59	3	14	15	10	17
Surgery	217	12	42	62	47	54
Other	177	13	37	51	39	37

TABLE 4 - Physician Specialists in Montana

Source: Health Data Book, Montana Department of Health & Environmental Sciences, 1979.

since 1953. During this time, 192 Montana students went to medical school under this program. Of those students graduating before 1970 who could be tracked, (43 of the 55 graduated could be followed) nine (21 percent) were practicing in Montana.[5]

At the present time, there are 36 medical students from Montana in the WICHE Student Exchange Program - ten being in the 1977-78 freshman class. The 1978-79 budget for these students is $444,000. Thus, the cost of the program is $12,333 per student per year.

The WAMI Program is a regional medical education program serving the states of Washington, Alaska, Montana, and Idaho and headquartered at the University of Washington. In this program, students receive their first year's training at a school in their state. In Montana's case, the school is Montana State University at Bozeman. The next two years are spent at the University of Washington's Medical School. Six week clerkships (apprenticeship) in the four-state area are offered to third and fourth year students. In Montana, four clinical sites have been established - Billings (Internal Medicine), Missoula (Internal Medicine), Great Falls (Pediatrics), and Kalispell/Whitefish (Family Practice). The intent of these clerkships is to give students experience in actual clinical settings.

Montana has been participating in the WAMI Program since 1975. Under current provisions, 20 students a year are accepted into the program from Montana. Whether or not a student is accepted depends upon the student's academic record; home towns are not considered by the selection committee in Montana. On the other hand, an analysis of the home towns of the students in the program shows a wide geographical distribution generally representative of the entire state.

Since the first WAMI supported students are only now graduating, it is too early to investigate the number of students who return to practice in Montana, or what specialties they have chosen. It has been argued that since they receive part of their education and clinical training in Montana, they will be more apt to return here to practice.

To support this program, the state has allocated 1.4 million dollars per year - a cost of $18,421 per student per year.

Table 5 is presented to address the "equal access to education" issue. It shows that without a separate medical school, Montana students have a lesser chance of being accepted into medical school. The population per medical student ratio in Montana for the period between 1969 and 1976 is 21,926. Comparable ratios for nearby states are between 10,000 and 18,000 for all states except Washington, which is higher than Montana's ratio.

The impact of the WAMI Program increasing admissions can be seen starting with the 1975 class. On the other hand, it is noted that students are not just relying on the WAMI Program for medical school. For example, in the 1975 class, 38 Montana students were accepted--20 in WAMI, 5 in WICHE, and 13 in other medical schools not participating in these programs. The average Montana applicant in 1975 applied to 9.5 schools--up from 7.8 applications per applicant in 1967.[6,7]

2.3 Residency Programs

At the present time, there are no residency programs in Montana. There appears to be a great deal of interest in starting one, two, or three Family Practice residency programs in the state. These would probably be located in Missoula, Billings, and Great Falls. The latter city appears to be the least interested at this time.

Several studies have shown that the location of the physician's residency program plays a large role in determining where he practices. For example, the probability of a physician remaining in the state of his birth (being educated elsewhere) is about 28 percent. The probability of remaining in the state where he took his residency is about 75 percent and the probability of remaining in the state where he was both born and took his residency is 72 percent.

For Montana, the minimal number of students who could be trained in any one program is 8. Its annual budget would be approximately $450,000 per year for an annual cost of $55,000 per resident. After each program becomes operational it will probably generate about half its budget through patient charges.

Current thinking calls for a relationship to be developed with the Department of Family Practice at the University of Washington. The program is to be phased in one city at a time, and the first year's training may be given to residents in Spokane and the next two in either Billings or Missoula -whichever site is picked to be first. Eventually all three years would be in Montana.

2.4 Organized Physician Recruitment Programs in Montana

A number of physician recruitment programs have been established in Montana. Besides individual community efforts at the local level, these include:

- Health Systems Research Institute (Salt Lake City),
- The Montana Medical Association's efforts,
- The Western Health System's Clearinghouse (Rapid City, South Dakota),
- The National Health Service Corps (NHSC), and
- Rural Health Initiative Programs.

The Health Systems Research Institute (HSRI) in Salt Lake City is a non-profit organization which has operated a hospital management program since April, 1974. As part of its program package, physicians and other health care personnel are placed in communities which contract with HSRI. At this time, five communities in Montana (Cut Bank, Shelby, Poplar, Big Timber and Harlowton) have HSRI contracts. Yellowstone National Park also uses HSRI physicians. Glacier County's (Cut Bank) contract with HSRI has totaled $714,000 over a two-and-one-half year period, ($200,000 per man year). Although this has not been as much as the revenue generated, authorities in Cut Bank believe that eventually it will exceed the county's cost.

The Montana Medical Association (MMA) maintains an active physician referral service. All inquiring physicians are asked to send their curriculum vitae, which then go to the areas needing the particular services offered by the physician. All inquiries are also listed in the bi-monthly bulletin distributed to approximately 120 subscribers. The MMA gets about 20 requests per month; however, there is no data on the number of placements made.

The Western Health Systems (WHS) Clearinghouse is a referral and placement program that receives a portion of federal grant money through the Old West Regional Commission. Since beginning operations in July, 1976 WHS has placed a physician in Sidney, Montana. Several placements are currently being negotiated, but the placement process often takes six to 12 months. Any inquiries from physicians interested in practicing in Western Montana are forwarded by WHS to the Montana State Department of Health and Environmental Sciences, Bureau of Health Planning and Resource Development which, in turn, forwards them to communities, hospitals, and individuals that have expressed a need for a given health care practitioner.

The National Health Service Corps (NHSC) is a federally sponsored program administered through the Public Health Service. It is designed to deal with the maldistribution problem by working with communities which have or will have a shortage of medical manpower. This program places Corps physicians in these shortage areas for two years.

When a physician is placed, the NHSC underwrites his practice, pays his salary and pays back his student loan, if necessary. The community agrees to provide an office and supplies as well as hire the support staff necessary. The community cost in starting a NHSC practice varies depending on whether a hospital or clinic is already there for the practice. The minimal start-up costs for equipment and supplies are between $10,000 and $15,000. In addition, the community is expected to pay the NHSC for physician costs to the best of its ability. This amounts to between $20,000 and $33,000 a year, depending on whether or not the physician is paying off a student loan. The money generated from the practice is used to pay off these costs.

The retention rate of NHSC physicians in shortage area communities has risen from 2 percent in 1972 to 30 percent in 1975. In Montana there are currently ten communities with NHSC primary care physicians. They are:

- Poplar (1 physician)
- Wolf Point (1 physician)
- Glasgow (1 physician)
- Chester (2 physicians)
- Superior (1 physician)
- St. Ignatius (1 physician)
- White Sulphur Springs (2 physicians)
- Harlowton (1 physician)
- Roundup (1 physician)
- Hardin (2 physicians)

To be designated a critical medical manpower shortage area, a community must have a population to physician ratio of 3,500:1. Communities with a ratio of 3,000:1 may qualify for assistance if other indicators of need are significant. In Montana, this means the following counties can be

	Total Applicants	Accepted	% Accepted	Population per Medical Student Accepted
1969-70	85	27	32	25,703
1970-71	69	33	48	21,042
1971-72	72	29	40	24,483
1972-73	106	38	36	18,921
1973-74	103	28	27	25,750
1974-75	93	33	36	22,273
1975-76	108	41	38	18,243
Total (Average) 1969-75	636	229	36	21,926

Table 5

A Comparison Between the Population per Medical Students for Montana and Nearby States With Medical Schools.

State	Average Population Per Medical Student Accepted (1969-75)
Colorado	18,245
Oregon	18,681
Utah	12,080
Washington	22,225
North Dakota	10,258
South Dakota	12,156

SOURCES:

1. Stritter, et al, "U.S. Medical School Applicants, 1969-70", **Journal of Medical Education**, Vol. 46, Jan. 1971, p. 40.
2. Dube', et al, "Study of U.S. Medical School Applicants, 1970-71", **Journal of Medical Education**, Vol. 46, Oct. 1971, p. 856.
3. Dube', et al, "Study of U.S. Medical School Applicants, 1971-72", **Journal of Medical Education**, Vol. 48, May 1973, p. 413.
4. Dube', et al, "Study of U.S. Medical School Applicants, 1972-73", **Journal of Medical Education**, Vol. 49, Sept. 1974, p. 860.
5. Dube', et al, "Study of U.S. Medical School Applicants, 1973-74", **Journal of Medical Education**, Vol. 50, Nov. 1975, p. 1023.
6. Dube', W. F., and Davis G. Johnson, Ph.D., "Study of U.S. Medical School Applicants, 1974-75", **Journal of Medical Education**, Vol. 51, Nov. 1976, p. 838.
7. Gordon, Travis L., "Descriptive Study of Medical School Applicants (1975-1976)", DHEW Publication No. (HRA) 77-52, Feb. 1977, p. 24.

designated as critical manpower shortage areas:

- Glacier
- Pondera
- Blaine
- Granite (currently losing its only physician)
- Musselshell
- Big Horn
- Phillips
- Valley
- Chouteau (now with only two physicians)
- Garfield (currently having no active physicians)

Furthermore, under new regulations, all Indian Reservations automatically qualify as critical manpower shortage areas.

The Rural Health Initiative (RHI) is another federal program in Montana engaged in physician recruitment and placement. In the past these programs have relied on recruiting from the private sector and on NHSC placements. To be eligible for RHI funds, communities must be designated as a Medically Under-served Area, which uses an index based upon the following four items:

- The ratio of primary care physicians to population,
- the infant mortality rate,
- the percentage of the population which is over 65, and
- the percentage of the population with family income below the poverty level.

Figure 1 shows those counties designated as medically under-served areas and the areas currently receiving RHI funding.

2.5 Nurse Practitioner

The nurse practitioner is a primary care provider prepared to give continuous, personalized care to the patient/client at his point of entry into the health care system and to continue as the individual's care provider. The delivery of health care in rural areas is not solely concerned with medical care but with health in a broader context. This broader context encompasses environmental and preventive health care, nutrition, physical and mental well-being, as well as medical care. More than 70 percent of the health problems in rural America are chronic health problems that limit activity and require continuous health supervision and support in order for the individual to accommodate them and enjoy a meaningful lifestyle. Within the rural population itself, these chronic health problems are greatest among middle and older age groups. Nurse practitioners possess the appropriate combination of physical and psycho-social skills to meet these needs. The physician is the recognized expert in medical aspects of health care and the nurse in nursing aspects. The roles of each are complementary and not substitutive.

Montana has 60 nurse practitioners collaborating with physicians. Figure 2 shows the geographical distribution of these professionals.

Most practice in primary care settings with physicians or work in state institutions, nursing homes, family planning agencies and public health departments.

3.0 Estimated Future Physician Manpower Requirements

This section will attempt to estimate the number of additional primary care physicians needed in Montana by 1985 and to develop reasonable strategies for their recruitment and retention in needy areas. It is felt that the need for other specialists in the state is less critical and will largely take care of itself.

The Employment Security Division of the Department of Labor and Industry, estimates Montana will need 1,157 physicians by 1985[1]. It estimates a need of 65 physicians a year. They do not separate requirements into specialty groupings.

Several professional groups and studies have suggested ideal population to physician ratios. These vary considerably from one reference to another. In estimating Montana's future need for primary care physicians, the following ratios will be used:

- 1 General/Family Practitioner for every 2,500 persons
- 1 Internist for every 10,000 persons
- 1 Pediatrician for every 10,000 persons
- 1 Obstetrician and Gynecologist for every 10,000 persons

The sources of these ratios are shown in Appendix A. Other possible ratios which could be used are also listed in every county with a hospital. It is emphasized that the above numbers are ideal ratios which may never be realized. They lead to higher estimates than the Department of Labor and Industry's projections. Nevertheless, they may well serve as planning goals.

Another assumption used in estimating the future needs for physicians is the separation rate (the percentage who die, retire, quit practicing or move out-of-state). The Bureau of Labor Statistics estimates that the 1970 separation rate for Montana physicians and osteopaths was 3.64 percent.

Table 6 shows the estimated number of primary care physicians needed in each of the subareas by 1985 using these assumptions. It appears that each of the subareas will need between 10 and 15 physicians per year, with the greatest need being for family practitioners.

The state's ability to attract this many physicians cannot be evaluated at this time. A number of physicians voluntarily come to this state to practice. This group has constituted Montana's primary source of physician manpower. It appears that organized recruitment programs have not been responsible for attracting them. In fact, the sporadic efforts of individual communities may have been more effective. Programs like HSRI and WSR have contributed little to Montana's overall supply of physicians, although there is no question that they have helped individual, selected communities.

The educational programs supported by the state have the ability to graduate about 32 physicians a year (20 from the WAMI program and 12 from the WICHE program). The specialty distribution of these physicians and the percentage returning to Montana is not known at this time.

It has been observed that the establishment of Health Maintenance Organizations, the increased use of nurse practitioners, and more group practices would decrease the number of physicians needed.

Yet, the viability and feasibility of Health Maintenance Organizations still need to be tested in rural areas. So far, no HMO has been successfully implemented in Montana.

An example of the potential reduction in physician manpower which might be realized if more Physician Extenders were commonly used is presented in Table 7. For example, if 10 percent of the general practitioners in solo practice were to use nurse practitioners, the need for general practitioners would be reduced somewhere between two and four percent.

The proliferation of group practices in Montana to the point where the shortage of primary care physicians is eliminated is not generally feasible. Because of our sparsely populated areas, only one or two physicians are needed - not a medical group. This concept might be more appropriate for primary care specialists willing to set up a regional medical practice in selected "medical centers."

One of the most promising concepts under consideration is

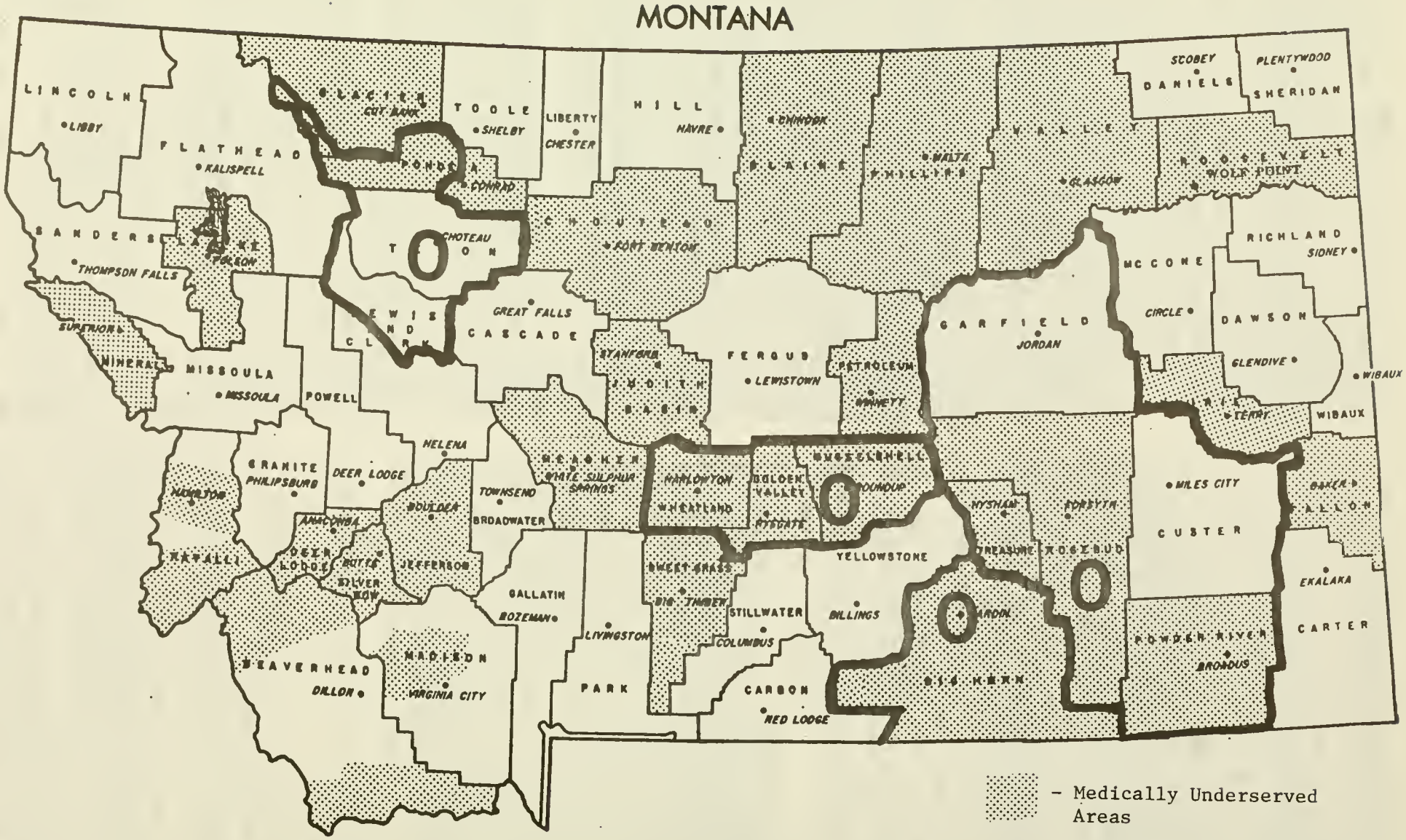


Figure 1 - Location of Medically Underserved Areas and Rural Health Initiative (RHI) Programs in Montana.

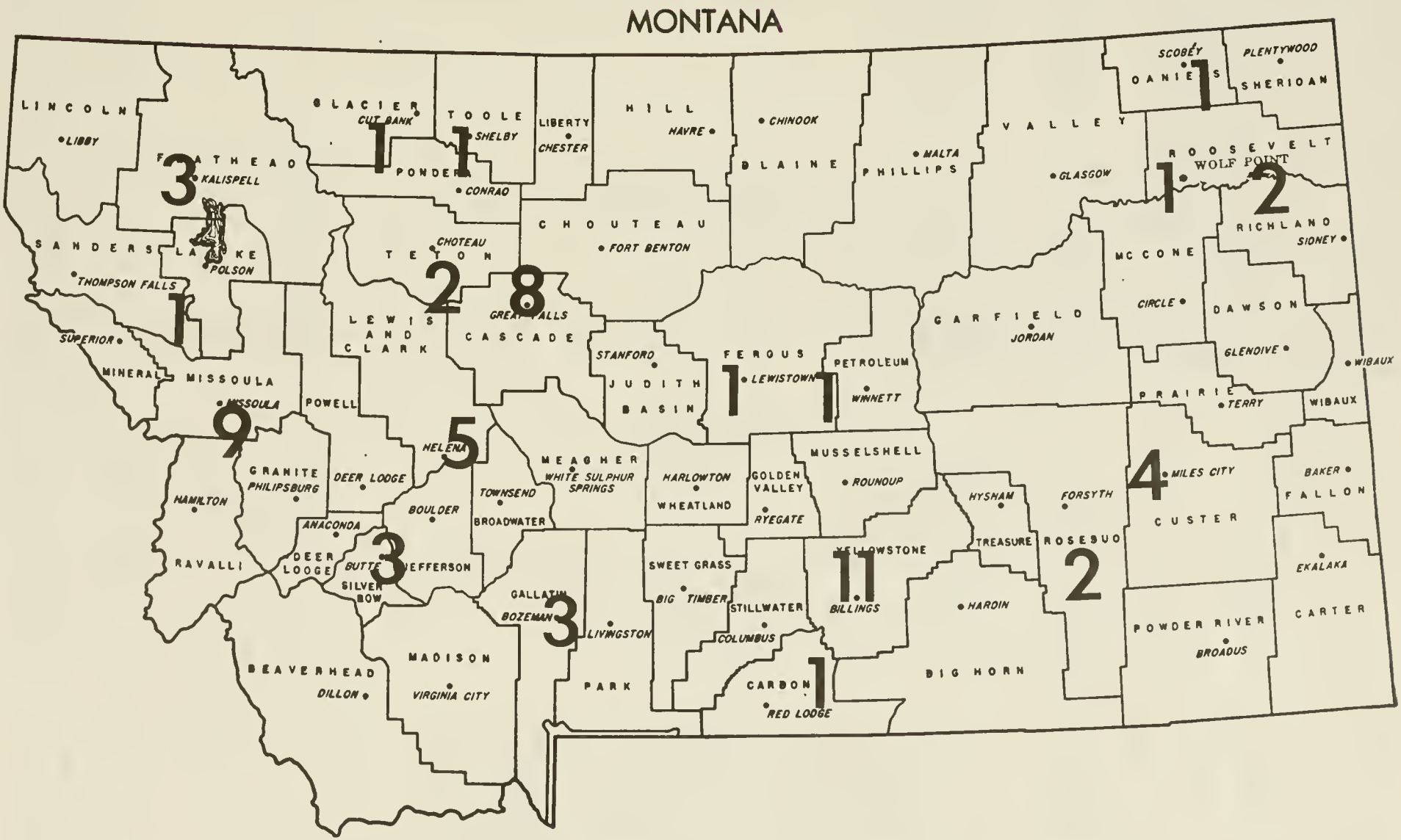


Figure 2 - Location of Nurse Practitioners in Montana.

Source: Montana Nurse Practitioners Interest Group of the Montana Nurses Association, updated, 1977.

the establishment of family practice residency programs in some of Montana's larger hospitals. When fully implemented each program could produce four family practitioners a year, of which three would probably choose to practice in Montana.

Programs are currently being developed and implemented at Montana State University School of Nursing to prepare nurses at the graduate level in primary health care.

REFERENCES

1) **Revised Codes of Montana**, RCM-1947, Title 66, Section 66-102.

2) **Federal Register,** "Criteria for Designation, Health Manpower Shortage Areas" Vol. 43 No. 6, Tuesday, January 10, 1978.

3) **Revised Codes of Montana**, RCM-1947, Title 66, Section 66-1222 3(a).

4) Letter from Robert L. Woodahl, Attorney General, to Mrs. Gertrude Malone, Executive Secretary, Montana Board of Nurses, August 28, 1975, Vol. No. 36, Opinion No. 18.

5) Western Interstate Commission for Higher Education, **A Study of Medical Graduates of the WICHE student Exchange Programs showing the Relation of that Group to the Medical Manpower of the Sending States,** January, 1978.

6) Gordon, T. L. "Discriptive Study of Medical School Applicants" (1975-1976) DHEW Publication No (HRA) 77-52, February, 1977.

7) Stritter, **et al,** "U.S. Medical School Applicants, 1969-1970," **Journal of Medical Education,** Vol. 46, January, 1971.

TABLE 6 - Estimated Number of Primary Care Physicians Needed in Montana in 1985 by Subarea and Specialty Grouping

	North-western	North Central	South-western	South Central	Eastern	State
Estimated 1985 Population	206,093	156,766	205,798	180,819	110,252	859,729
Estimated Number of Physicians Needed:						
• General/Family Practice	82	63	82	72	44	343
• Internal Medicine	21	16	21	18	11	87
• Pediatrics	21	16	21	18	11	87
• Obstretics/Gynecology	21	16	21	18	11	87
TOTAL	145	111	145	126	77	604
Estimated Number of Current Physicians Still Practicing in 1985						
• General/Family Practice	49	29	61	37	30	206
• Internal Medicine	27	15	13	27	3	85
• Pediatrics	7	6	5	6	1	25
• Obstetrics/Gynecology	9	7	7	11	2	36
TOTAL	92	57	86	81	36	352
Estimated Need Per Year						
• General/Family Practice	5.6	5.7	3.6	5.9	2.3	23.1
• Internal Medicine	0	0.2	1.3	0	1.3	2.8
• Pediatrics	2.3	1.7	2.7	2.0	1.7	10.4
• Obstetrics/Gynecology	2.0	1.5	2.3	1.2	1.5	8.5
TOTAL	9.9	9.1	9.9	9.1	6.8	44.8

Specialty	Potential Increase in Productivity	Proportion of Physicians Employing Physician Extenders 10%	25%
General Practice	16-36%	2-4%	4-9%
Pediatrics	18-30%	2-3%	4-7%
Obstetrics	25%	2.5%	6%

Table 7

Potential Reduction in the Need for Selected Groups of Physician Manpower if Physician Extenders Were Employed by a Given Percent of the Physicians.

SOURCE: Applied Management Science, **The Effects of Task Delegation on the Requirements for Selected Manpower Categories,** Contract No. NIH 72-4406, prepared for the Division of Manpower Intelligence, Bureau of Health Manpower Education, National Institutes of Health, Bethesda, Maryland, May 25, 1973.

5.2
SUMMARY
DENTAL PERSONNEL

This component addresses dentists, dental hygienists, dental assistants and dental laboratory technicians. It estimates the state's future needs for these types of professionals and describes the various educational support and recruitment programs currently used.

In recent years, there has been a substantial rise in the number of dentists practicing in the state. Montana presently has a ratio of 2,134 people for each practicing dentist. Each subarea has approximately that same ratio with the exception of Eastern Montana, which has 33 percent more people to dentists. Eight counties in Montana do not have a practicing dentist and fifteen others have more than 3000 persons for each dentist.

Montana does not have a dental school and has to rely on other states for its dental practitioners. State supported programs to encourage dentists to practice in Montana have significant impact and are considered successful.

Presently there are 17.8 dental hygienists for each 100 dentists. The number of hygienists in the state has risen substantially in the past and is expected to continue to do so.

The MHSA recommends that the state should maintain a population to dentist ratio of 2,000 to 1 in each subarea. With three-fourths of the new dentists needed coming on their own accord, it is anticipated Montana will not need to depend on the National Health Service Corps for future placements. The National Health Service Corps Dental Program should be used to place dentists only in shortage areas where viable, self-supporting practices can be developed.

DENTAL PERSONNEL

Goals:

These guidelines are to assure that the residents of Montana have reasonable access to quality dental care. The following planning goals are suggested:

1. Montana should strive to maintain an overall population to active general dentist ratio of 2,000:1 in each subarea.
2. There should be at least 40 active dental hygienists for every 100 general dentists in each subarea.

Objectives:

1. Through 1985, the two state-supported dental training programs (WICHE & Minnesota) should continue to be supported by state funding.
2. The Dental Hygienists Program at Carroll College should continue to be supported through 1985. It appears unnecessary to start any other dental hygienist educational programs for the foreseeable future.
3. The feasibility of establishing another school for dental assistants should be investigated.
4. The National Health Service Corps (NHSC) Dental Program should be used to place dentists only in shortage areas where viable, self-supporting practices can be developed. At the present time, it is recommended that the following areas be designated critical manpower shortage areas:
   - — Phillips County
   - — Powder River County
   - — Liberty County

   Before any new areas are to be designated, evidence must be provided, either through the county commissioners, local dental society, or by community petition, that there is broad-based community support for a NHSC dentist. These new areas should have a population base of at least 2,000 so that a viable dental practice can be built.
5. Those areas currently having an NHSC dentist should continue to be designated critical manpower shortage areas. They are:
   - — Roosevelt County (Poplar)
   - — Rosebud and Treasure Counties (Colstrip)

   If they should lose their NHSC dentist, the MHSA should, at that time, reassess their status as a shortage area.

1.0 Background

Dentistry is that branch of the health professions responsible for maintaining and improving the oral health of the public. The primary provider of dental care is the dentist. Assisting the dentist, and, in effect, extending the dentist's own productive capacity are three categories of dental auxiliaries: dental hygienists, dental assistants, and dental laboratory technicians. [1]

As the primary provider of dental care, the dentist has final responsibility for the delivery of all dental services. More than 70 percent of the dentists in the United States are general practitioners in solo private practices. However, the number of group practices and specialty practices has been increasing.

The dental hygienist, working under the direction of a dentist, performs the traditional tasks of dental prophylaxis (scaling and polishing teeth), exposing and processing dental radiographs (X-rays), applications of fluorides and other preventive agents to teeth, and instruction of patients in oral hygiene techniques and proper diet. The great majority of dental hygienists work in private dental offices. The remainder are employed in public and private schools, clinics, hospitals and other institutions.

The dental assistant's primary function is to assist the dentist as he treats his patients. The assistant's tasks include preparation of the patient, maintaining a clear operating field, passing instruments and materials to the dentist and preparation of materials used in treatment.

Dental laboratory technicians manipulate and shape materials to construct complete and partial dentures, crowns, bridges and orthodontic devices. Most dental technicians work in commercial dental laboratories. However, increasing numbers are being employed by private dental practitioners.

In Montana, only dentists and dental hygienists are required to be licensed. A dental assistant may become a Certified Dental Assistant (CDA) by passing an examination conducted by the Certifying Board of the American Dental Assistants Association. In order to pass this examination, a dental assistant must demonstrate proficiency in a number of dental skills. Because these skills are taught at all accredited dental assistant schools, graduates of these schools generally are certified. At the present time in Montana, these skills and abilities of the Certified Dental Assistant are not being recognized.

The purpose of this component is to estimate the state's future needs for dentists, dental hygienists, and dental assistants, to explore the effectiveness of current recruitment programs in Montana, and to establish MHSA policy toward future manpower issues. It is noted that the MHSA has little direct influence over the state's general manpower policies. The most direct impact comes from the agency's responsibility to assist in the designation of Critical Manpower Shortage Areas prior to the placement of National Health Service Corps (NHSC) personnel and in its responsibility to review Rural Health Initiative (RHI) programs.

2.0 Description of the Current Situation

2.1 Dentists

A comparison of the number of active dentists and population to dentist ratios between Montana and the United States is presented in Table 1. Although Montana has in the past had more population to be served by each dentist than the national average, it appears that this may have changed in recent years. Between 1973 and 1976 there appears to have been a substantial rise in the number of dentists practicing in the state.

In 1976 and 1977, 65 new dentists were licensed to practice in Montana. Of these, about half (33) have established their practices in Montana. On the other hand, the Bureau of Labor Statistics estimates that the 1970 separation rate (the percentage who die, retire, quit practicing or move out of state) for dentists in Montana was 3.44 percent, which means the state loses about 12 dentists each year. They project that the 1985 separation rate will be 3.21 percent. Thus, it appears that the number of practicing dentists is continuing to increase.

It should be further noted that the State Board of Dental Examiners has recently instituted a second examination each year, so more dental graduates will have an opportunity to take the Montana Board. The effect of this policy, if any, would be to further increase the number of dentists practicing in Montana.

Manpower surveys by the State Dental Bureau in 1975 and 1977 indicate that the average age of Montana dentists is

Year	Number of Active Dentists		Population to Dentist Ratio	
	U.S.	Montana	U.S.	Montana
1965	86,317	337 [1]	2,223	2,095
1967	90,716	318 [1]	2,157	2,204
1968	92,013	318 [1]	2,147	2,179
1969	92,984	320	2,147	2,169
1970	95,422	314	2,107	2,210
1971	97,210	316 [1]	2,101	2,247
1972	97,970	315	2,107	2,283
1973	100,780	330 [1]	2,065	2,283
1976	111,178	380 [2]	2,186	1,982
1977		409 [3]		1,867

SOURCES:

1) U.S. Department of Health, Education and Welfare, Public Health Service, Health Resources Administration, National Center for Health Statistics, **Health Resources Statistics, Health Manpower and Health Facilities**. Respective Years, Rockville, Maryland. (The publication reports data two years old.)
2) American Dental Association, Bureau of Economic Research and Statistics. Distribution of Dentists in the United States by State Region, District and County, 1976. Chicago, Illinois, 1976.
3) Data compiled from recent inventory of dentists in Montana.

TABLE 1: Number of Active Dentists and Population to Dentist Ratios for Montana and the U.S. for Selected Years.

about 46 years. Although the number of dentists over 65 years old has increased, so has the number between 25 and 34 years of age.

Table 2 shows the number of active general dentists, the population to dentist ratio and the number of dental specialists in each county and subarea as of 1977. These statistics were compiled from a directory of dentists furnished by the State Dental Bureau, updated with 1976 and 1977 new license lists and verified by local telephone books. It was assumed that dentists listed as part-time worked one-half time unless otherwise known to be working lesser hours. Many of the dentists and dental specialists maintained more than one office. Their time was allocated according to the times listed in the Dental Bureau's directory. Population data for the population to dentist ratios was based upon 1976 estimates from the Bureau of Census.

Of the 409 active dentists in Montana in 1977, 353 (86 percent) were in general practice. Thus, the overall population per general dentist in Montana is about 2,134.

It appears that each subarea is reasonably close to that ratio with the exception of Eastern Montana. Eastern Montana has about 33 percent more people to dentists than the other subareas.

Based on these county ratios, it appears the maldistribution of dentists in Montana is not as severe as that of other health professionals. It is suggested that dentists are more responsive to market conditions than other health professionals. Yet, eight counties in Montana do not have a practicing dentist and fifteen others have more than 3,000 persons for each dentist.

The dental specialist profile (Table 2) appears to be similar to national statistics. Table 2 includes both board certified or board qualified specialists as well as those limiting their practices to specific problems. In Montana, these specialists are primarily located in the major towns, which is to be expected because their practices require a larger population base. Many of these specialists also maintain offices in a second community where they practice part-time. However, Table 2 does indicate a general lack of dental specialists in Eastern and South Central Montana, with the exception of the Billings area.

An analysis of the dental schools from which Montana dentists graduated shows a heavy emphasis on the University of Minnesota and private universities in the Midwest prior to 1970. The University of Minnesota supplied roughly 21 percent of the dentists who are currently practicing and who graduated prior to 1970. Six other Midwestern schools contributed another 41 percent. In contrast, the Pacific Coast schools, the University of Oregon and the University of Washington, graduated 10 percent.

Between 1970 and the present, a shift has taken place. Of those Montana dentists who graduated during this period, 12 percent graduated from the University of Minnesota (still the school which graduates the most dentists practicing in Montana), 23 percent from Midwestern schools and 14 percent from the Pacific Coast Schools. The drop in graduates from Midwestern schools seems to indicate that the schools are becoming more locally oriented. Inflationary pressures may have forced them to seek state monies. On the other hand, the increase in Montana graduates from the Pacific Coast schools may reflect the impact of the WICHE Program. (The WICHE student exchange program will be discussed in the next section.)

2.2 Dental Education and Recruitment Efforts

Montana has no dental school and is, therefore, dependent upon out-of-state institutions for its dental practitioners. In addition, Montana has no reciprocity agreement with any other state. All dentists licensed in Montana must take the state board examination.

Currently there are two educational programs for dentists sponsored by the state (the WICHE Student Exchange Program and the Minnesota Program) and one placement program (the National Health Service Corps). In addition, the State Dental Bureau assists in placement by publishing a small pamphlet for dentists expressing an interest in practicing in Montana.

The general intent of these state supported educational programs is two-fold. One is to provide a sufficient number of specific types of trained professionals for Montana. Equally important is the goal of providing Montana students an opportunity to obtain a professional education they might not otherwise get.

The WICHE Student Exchange Program helps students in Western states obtain access to fields of professional education not available in their home states. In dentistry, UCLA, UCSF, Loma Linda University, University of the Pacific, USC, University of Oregon and the University of Washington are currently participating in the program. Each student must be accepted by one of the schools on his/her own merit. Once accepted, the State of Montana pays a given amount to the school and the student pays in-state tuition. In 1976, the State spent $96,000 for 16 dental students in the program. The amount appropriated for the 1977-1978 biennium was $230,000 for 20 students. [2]

An analysis of the WICHE dental students is presented in Table 3. It shows that of the 50 Montana students who were

SUBAREA	COUNTY	Active General Dentists	1976 Pop. per Active General Dentists	SPECIALISTS Oral Surgery	Ortho-dontics	Pedo-dontics	Perio-dontics	Prostho-dontics	Public Health
North-western	Lincoln	9.2	1,783						
	Flathead	30.8	1,474	0.8	3.0	1.0			
	Sanders	3.0	2,667						
	Lake	8.0	2,175					1	
	Mineral	1.0	3,500						
	Ravalli	8.0	2,132	0.2	0.05				
	Missoula	44.0	1,489	2.0	2.90	4.0	0.95		
SUBTOTAL		104.0	1,680	3.0	5.95	5.0	0.95	1	0
North Central	Glacier	3.5	3,114						
	Toole	2.0	2,650		1				
	Pondera	2.0	3,500						
	Teton	3.0	2,033						
	Cascade	37.5	2,229	2.0	4.22	1	1	2	1
	Choteau	2.0	3,100						
	Hill	8.0	2,262		0.53				
	Blaine	2.0	3,700						
	Liberty	1.0	2,500						
SUBTOTAL		61.0	2,411	2.0	5.75	1	1	2	1
South-western	Beaverhead	3.9	2,102		0.05				
	Madison	1.1	4,909						
	Gallatin	17.4	2,149	0.8	2.6	0.8	1	0.5	
	Lewis & Clark	17.3	2,197		2.08	1.0	0.1		1
	Broadwater	2.5	1,240		0.02				
	Jefferson	1.0	6,900						
	Meagher	1.0	2,200						
	Silver Bow	21.6	1,903	0.2	0.90	0.2	0.05		
	Deer Lodge	5.0	2,920						
	Powell	4.0	1,900						
	Granite	1.0	2,700						
	Park	8.0	1,575		0.4				
SUBTOTAL		83.8	2,145	1.0	6.05	2.0	1.15	0.5	1
South Central	Fergus	4.5	2,889		0.25				
	Petroleum	—	—						
	Judith Basin	0.4	6,750						
	Wheatland	1.0	2,500						
	Golden Valley	—	—						
	Musselshell	1.0	4,400						
	Sweet Grass	1.0	3,200						
	Stillwater	1.5	3,467						
	Carbon	3.0	2,767						
	Big Horn	2.0	5,300		0.10				
	Yellowstone	56.0	1,717	3	5.15	3.0	3	1	
SUBTOTAL		70.4	2,148	3	5.50	3.0	3	1	0
Eastern	Valley	4.0	3,350		0.9				
	Daniels	1.0	3,200						
	Sheridan	2.0	2,750						
	Roosevelt	5.5	1,909		0.1				
	McCone	1.0	2,700						
	Garfield	—	—						
	Richland	4.5	2,289						
	Dawson	5.5	2,036						
	Wibaux	—	—						
	Rosebud	2.0	4,950						
	Treasure	—	—						
	Powder River	—	—						
	Custer	5.0	2,600						
	Prairie	—	—						
	Phillips	1.0	5,500						
	Fallon	1.0	3,900						
	Carter	—	—						
SUBTOTAL		32.5	3,068	0	1.0	0	0	0	0
STATE TOTAL		351.7	2,134	9.0	24.25	11	6.1	4.5	2

Table 2

Dentists and Dental Specialists in Montana by County and Subarea (December, 1977).

followed, 23 (46%) returned to the state to practice. Of the students graduating between 1970 and 1977, 48 percent are currently practicing in the state and 33 percent are in the Armed Services. It is interesting to note that most of the WICHE dentists practicing in Montana returned to their original home towns.

In summary, it costs the State of Montana approximately $46,000 to train a dentist in the WICHE program to practice in Montana. The program costs $5,750 per student per year in the WICHE program ($23,000 for four years), and the State can expect about one-half of the students to return to Montana.

The second educational program sponsored by the State is a similar arrangement with the University of Minnesota. This program was set up by the Rural Dental Act of 1975. Part of this program provided for students to receive some of their practice training in the offices of Montana dentists. However, because of conflict with the Dental Practice Act, this part of the program has not been successfully implemented.

At the present time, 20 Montana students are in the Minnesota Program. The cost of the program to the State is $11,200 per student per year, and indications are that it will continue to increase $1,000 a year. Because the program is relatively new, its impact on dental recruitment cannot yet be assessed.

The most active placement program in Montana is the National Health Service Corps. This program places dentists in designated dental shortage areas for two years. The contract can be renewed for a second two years. It is expected that most practices should be able to do without NHSC assistance after the first two years.

When a dentist is placed, the NHSC underwrites the practice, pays the dentist's salary and pays back his student loan. In some cases, the dental equipment is also purchased by the NHSC.

A dentist is placed on site only after a local community group has agreed to furnish a facility and take financial responsibility for the practice. The community is also expected to pay back the government's cost and the practice's overhead from the revenue generated. This amounts to about $50,000 per year if no equipment has to be purchased. (The average NHSC dentist's salary is $20,447 per year if no student loan has to be repaid and $30,447 if a student loan has to be paid.) The National Health Service Corps feels that the practice can be viable if the dentist can see between seven and fifteen patients a day.

Nationally, 45 percent of the Corps dentists have extended for another two years, 22 percent left the Corps but remained on site, and 32 percent left both the Corps and the community. In Montana, there are currently two communities with NHSC dentists. They are:

- Poplar (started 6/77)
- Colstrip (started 7/78)

To be designated a critical dental shortage area, a community must have a population to dentist ratio of 5,000:1. In some cases, a ratio of 4,000:1 can qualify. [3] In Montana, this means the following counties could be designated as critical manpower shortage areas:

- Petroleum County
- Judith Basin County
- Garfield County
- Wibaux County
- Prairie County
- Carter County

It is felt that many of these counties currently without a dentist do not have a sufficient population base to support a dental practice. Most of these counties have populations of less than 2,000 persons.

Thus, in summary, Figure 1 shows the counties eligible to be designated as critical dental manpower shortage areas, those counties recommended for designation, and those counties where NHSC dentists are currently practicing.

One problem with the National Health Service Corps dentists is that they need not be licensed in Montana. The Denver Regional Office, however, has developed a policy that each assignee take the examination as soon as possible after placement. If they do not get a Montana license, they cannot write prescriptions or get Medicaid reimbursement because they can't get a Medicaid Provider Number. If the federal government buys their equipment, they may be faced with repair and maintenance problems since supply companies are reluctant to service equipment not purchased from them.

2.3 Dental Hygienists

There is little trend data on the number of dental hygienists in the state. Nationally, between 1960 and 1973, the number of active hygienists increased from 8,000 to over 22,000. During the same period, the ratio of active hygienists per 100 dentists doubled. In 1973 this ratio was 2:1. However, because part-time employment is common among hygienists, the effective supply of hygienists is probably less than this ratio suggests. [4]

Table 4 shows the number of dental hygienists employed in Montana in 1975 and 1977 by county and subarea. It also shows the number of hygienists currently licensed and living in Montana. The employment statistics were compiled by the State Dental Bureau from surveys they conducted. The license data was obtained from the 1975 Board of Dentistry's directory and updated with 1976 and 1977 licensing lists.

Many of the hygienists work part-time and several work for more than one dentist. Table 4 indicates 59 percent of the

Year of Graduation	In-State	Out-of-State	Military	Total
Before 1970	13 (45%)	14 (48%)	2 (7%)	29
After 1970	10 (48%)	4 (19%)	7 (33%)	21
TOTAL	23 46%)	18 (36%)	9 (18%)	50 (100%)

1) Sixty Montana dental students participated in the WICHE Student Exchange Program. Ten could not be tracked with the ADA Directory. Of these, five were 1977 graduates and one is known to have died.

SOURCE: Compiled from unpublished data from the Commission on Higher Education and the ADA Directory of Dentists.

TABLE 3

Practice Location of Montana Dental Students Participating in the WICHE Student Exchange Program.

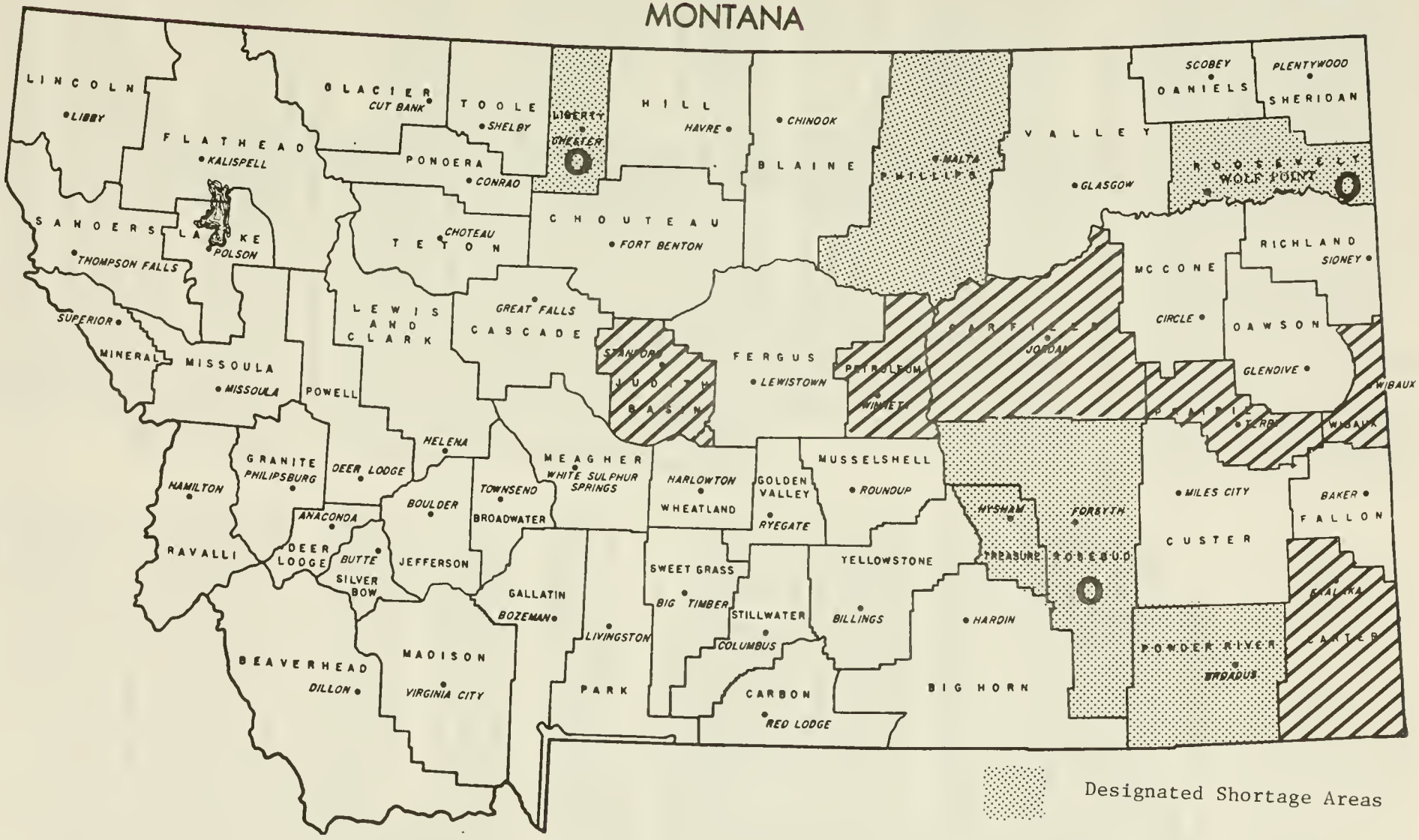


FIGURE 1 - Critical Dental Manpower Shortage Areas in Montana

licensed hygienists are employed. Nationally, it appears that there are 20 hygienists employed for each 100 dentists. In Montana, this ratio is somewhat smaller, 17.8 full-time equivalent hygienists per 100 active general dentists. It is interesting to note that Eastern Montana has the fewest per capita dentists and also has the lowest ratio of hygienists to dentists. One would expect that in areas where dentists are needed, hygienists would be utilized to a greater extent, but this does not appear to be the case.

2.4 Education and Recruitment Programs for Dental Hygienists

Carroll College currently has the only dental hygiene program in the state. This is a relatively new four-year program, having its first class graduate in 1975. The average class size at Carroll is 20 students; about three-fourths of any given class graduate. The administrators of the program have reported 100 percent placement of its graduates so far, but it appears that only between nine and ten end up practicing in Montana.

Since Carroll College is a private institution, it is not eligible for state support. The dental hygiene program was initiated with a grant from the Veterans Administration due to expire in 1979.

Until recently, Montana has also participated in a WICHE Student Exchange Program for Dental Hygienists. The program has been phased out because the state now has a dental hygiene program at Carroll. Thus, the last WICHE dental hygiene students to be supported graduated in June, 1979.

The National Health Service Corps also helps place dental hygienists in shortage areas under arrangements similar to their physician and dentist programs. However, no explicit criteria has been used to govern these placements and no NHSC dental hygienists have been placed in Montana. The Glendive RHI was supporting a dental hygiene program, but the hygienists were independently recruited.

2.5 Dental Assistants

The estimated number of active dental assistants increased from some 55,000 in 1950 to over 134,000 in 1975. Over the same period, the ratio of active dental assistants to active dentists increased from 70 assistants per 100 dentists to 120 per 100.

The majority of dental assistants have been trained by their dentist employer. However, over the past decade, the number of graduates from accredited programs has increased from 1,242 to 5,972, and the number of programs has increased from 64 to 250.

In 1976, the Great Falls Vo Tech Dental Assistant School sent out a questionnaire to all the dentists in Montana, seeking information on dental assistants, such as number employed and type of training. Thirty-six percent of the dentists responded, which is a sufficient number to give a valid representation of the state as a whole.

The information gained indicates there were 1.1 dental assistants employed per dentist at that time. In 1975, the latest figures available on a nationwide basis, the average ratio was 1.2 dental assistants per dentist, so this figure of 1.1 in Montana is slightly below the national average. All indications are that this figure will increase as "four handed" dentistry is practiced more and the skills of dental assistant school graduates are utilized to a greater extent.

The national trend has been for dentists to employ graduates from accredited dental assistant programs, rather than train them on the job. The survey taken here in Montana indicates that over 48 percent of the dental assistants now employed have had some formal education. This trend has seen the number of graduates from accredited schools increase from 1,242 to 5,972 in the last decade - an increase of almost five-fold.

There is a high turnover in dental assistants - estimates are as high as every six months in the average dental office. This figure does not indicate the number that are actually leaving the profession, but rather those that change employers. This rate of change is much greater than the number leaving the dental profession, and is understandable in a job situation where there is a constant one-to-one relationship between dentist and assistant. Personal interrelationships, especially personality clashes, far outweigh skills in these situations. Marriage must also be considered an attrition factor, as well as tedium and boredom with a job requiring highly developed skills and concentration that at times becomes very repetitious.

3.0 Estimate of Future Personnel Needs

3.1 Future Dental Needs

In estimating the long-range future manpower requirements for general dentists, four assumptions are made. They are:

1. The state should attempt to maintain a population to dentist ratio of 2,000:1 in each subarea.
2. The 3.21 percent separation rate for dentists in Montana (projected by the Bureau of Labor and Statistics) is realistic.
3. About three-fourths of the new dentists needed will come to practice in Montana of their own accord.
4. The National Health Service Corps will have little overall impact on Montana's future dental manpower requirements.

Table 5 shows the estimated number of additional dentists needed in Montana in 1985 by subarea. It is estimated that 77 more dentists will be needed to keep up with Montana's expected population growth and another 77 will be needed to replace those lost by attrition. This amounts to a total of 22 newly licensed dentists each year.

It is assumed that at least three-fourths (17) will be voluntarily attracted to Montana without any formal recruitment or educational support program. Even this assumption may be conservative. It appears that other areas of the nation are experiencing a surplus of dentists, thus more dental graduates may be attracted to Montana. For the years 1976 and 1977, for example, Montana averaged 15 newly licensed dentists who fell into this category. Only four of these 30 new dentists had participated in the WICHE program.

At the present time, Montana has 40 dental students in either the WICHE or the Minnesota program, with about ten graduating each year. Based on the past experience of the WICHE program, five of these will end up practicing in Montana. Thus, it can be expected that the State's needs for dentists will be met for the next four years.

3.2 Future Need for Dental Auxiliaries

It is expected that by 1985 the need for dental auxiliaries will increase significantly. Clinical studies have shown that a dentist working with an auxiliary is about 30 to 33 percent more productive than a dentist working alone.[15] This may increase as the auxiliary is allowed to perform even more functions.

In estimating the need for dental hygienists in Montana in 1985, three assumptions are made. They are:

1. The need for hygienists will increase 100 percent to 40 hygienists per 100 dentists by 1985.
2. There will be no attrition among the hygienists currently employed.
3. The labor participation rate will continue to stay at 60 percent and those employed will be working 75 percent of the time.

Subarea	County	Dental Hygienists (Feb. 1975) Number	Total Days/Wk.	Fte.	Dental Hygienists (April 1977) Number	Total Days/Wk.	Fte.	Number Licensed Hygienists (1977)
Northwestern	Lincoln	1	5	1.0	2	6	1.2	3
	Flathead	8	3.5	7.0	8	37.5	7.5	11
	Sanders							
	Lake							
	Mineral							
	Ravalli							1
	Missoula	14	55	11	17	64.5	12.9	23
SUBTOTAL		23	63.5	19.0	27	108	21.6	38
North Central	Glacier							
	Toole							2
	Pondera							
	Teton	1	1	0.2	1	2	0.4	
	Cascade	7	16.5	3.3	10	27.5	5.5	16
	Choteau	1	5	1.0				1
	Hill	4	18	3.6	5	25	5.0	6
	Blaine				1	1	0.2	1
	Liberty							1
SUBTOTAL		13	40.5	8.1	17	55.5	11.1	27
Southwestern	Beaverhead							1
	Madison							1
	Gallatin	4	20	4.0	7	28	5.6	10
	Lewis & Clark	5	16.5	3.3	8	32.5	6.5	21
	Broadwater							1
	Jefferson							
	Meagher							
	Silver Bow	2	9	1.8	4	12.5	2.5	6
	Deer Lodge							
	Powell							
	Granite							
	Park				1	5	1.0	1
SUBTOTAL		11	45.5	9.1	20	78	15.6	41
South Central	Fergus	1	2	0.4	1	2	0.4	3
	Petroleum							
	Judith Basin							
	Wheatland							
	Golden Valley							
	Musselshell							1
	Sweet Grass							
	Stillwater							
	Carbon							
	Big Horn							
	Yellowstone	8	34.5	6.9	13	53.5	10.7	16
SUBTOTAL		9	36.5	7.3	14	55.5	11.1	20
Eastern	Valley				1	2	0.4	3
	Daniels							
	Sheridan				1	5	1.0	2
	Roosevelt							2
	McCone							
	Garfield							
	Richland							
	Dawson				1	5	1.0	2
	Wibaux							
	Rosebud							
	Treasure							
	Powder River							
	Custer	1	5	1.0	1	5	1.0	3
	Prairie							
	Phillips							
	Fallon							
	Carter							
SUBTOTAL		1	5	1.0	4	17	3.4	12
STATE TOTAL		**57**	**191.0**	**44.5**	**82**	**314**	**62.8**	**140**

TABLE 4 Dental Hygienists in Montana by County and Subarea.

The first assumption is supported by the fact that the number of additional hygienists currently needed is about equal to the number currently employed. In addition, the number of dental hygienists employed nationally in 1973 is double the number which was employed in 1960.[7] A 1974 national manpower study also projects that the supply of hygienists will double between 1975 and 1985.[8]

The second assumption will yield an extremely conservative estimate of the number of hygienists needed in 1985. However, no estimate of the separation rate for hygienists is currently available. It appears that most dental hygienists work for only two to three years and then drop out of the labor force. This observation is supported by the fact that most of the hygienists in Montana are relatively young.

The final assumption indicates that the participation rate in 1985 will remain about the same as is currently observed. In 1977, 82 of the 140 hygienists in Montana (58.6 percent) were employed. These 82 can be converted to 62.8 full-time equivalent hygienists - that is, each was employed about 76.6 percent of the time (see Table 4).

Based on these assumptions, the estimated number of dental hygienists needed in Montana in 1985 was calculated and is presented in Table 6. It is estimated that Montana will have to license 35 hygienists per year to meet its 1985 needs. In 1976, 30 new hygienists were licensed and in 1977, 40 were licensed. However, maintaining this level of new dental hygienists depends heavily upon out-of-state educational institutions over which the state has no control. In addition, many of the graduates of Carroll College's program are out-of-state residents who will not end up practicing in Montana.

In order to reach the goal of 40 active hygienists per 100 dentists in Montana by 1985, two options may be considered. First, the WICHE Student Exchange Program may be reinstated; second, a dental hygienist program may be instituted in the Montana university system. Of the two, supporting the WICHE program would be less expensive unless Montana were to participate in the Rural Dental Education Program (RDEP) program and the dental hygienist program could be established in conjunction with it.

With respect to the need for dental assistants, if the assumption is made that the dental assistant-dentist ratio will remain the same until 1985, and allowing for a minimal attrition rate, an additional 169 dental assistants would be needed. If the assumption is made that the number of employed dental assistants will increase at just one-half the rate that it has increased nationally during the past ten years (150 percent from 1965 to 1975), then an additional 439 dental assistants would be needed. A median figure would be 304.

To meet this demand, 43 dental assistants would be needed each year. Should the trend continue for dentists wanting assistants that have been trained at an accredited dental assistant school, then 14 additional assistants would be needed in addition to those graduated from the Great Falls Vo Tech Center. These additional dental assistants would either have to be recruited from sources outside the state, or else additional training facilities would have to be established within the state. Since there are just five dental assistant schools in the four surrounding states of Idaho, Wyoming, North Dakota and South Dakota, (plus an additional two in the Spokane, Washington area), it may be advisable to consider facilities within the state.

Records show that two-thirds of last year's graduating classes from the Great Falls Vo Tech Center obtained employment in Great Falls and the immediate vicinity. Judging from this, the Billings area might bear investigating as an additional site for a dental assistant program.

No estimate of the future need of dental laboratory technicians can be made at this time.

SUBAREA	COMMUNITY	COUNTY	Estimated Number of Dentists Currently Needed
Northwestern	Eureka or Whitefish	Lincoln/Flathead	1-2
	Missoula	Missoula	1-10
	Polson	Lake	1
	Ronan	Lake	1
North Central	Chester	Liberty	1
	Conrad	Pondera	1[1]
	Cut Bank	Glacier	1
	Great Falls	Cascade	1-2
	Havre	Hill	1-2
	Shelby	Toole	1[1]
Southwestern	Anaconda	Deer Lodge	1-4
	Butte	Silver Bow	1-10
	Ennis	Madison	1
	Helena	Lewis & Clark	1[2]
	Livingston	Park	1
	Philipsburg	Granite	1
South Central	Billings	Yellowstone	1-5[3]
	Columbus	Stillwater	2
	Hardin	Big Horn	1
Eastern	Baker	Fallon	1
	Glasgow	Valley	1-2
	Glendive	Dawson	1-5
	Malta	Phillips	1
	Sidney	Richland	1
	Wolf Point	Roosevelt	2

TABLE 5

Current Dental Manpower Needs as Viewed by Montana Dentists.

SOURCE:
Dental Manpower Survey conducted by the State Bureau of Dentistry, April, 1977.

1) National Health Service Corps Dentists have been placed in these two communities since the survey was conducted.
2) One dentist stated a need for an oral surgeon and another a need for a periodontist.
3) One dentist stated a need for an oral surgeon.

Subarea	Number of Dentists Needed in 1985	Number of Dental Hygienists Needed in 1985 [1]	Number of Dental Hygienists Currently Employed	Additional Dental Hygienists Needed in 1985	Newly Licensed Dental Hygienists per year
Northwestern	103	41.2	21.6	46.6	7
North Central	75	30	11.1	42.0	6
Southwestern	103	41.2	15.6	56.9	8
South Central	90	36	11.1	55.3	8
Eastern	55	22	3.4	41.3	6
TOTAL	426	170.4	62.8	242.1	35

1) It is assumed that in 1985, Montana will require 40 dental hygienists/100 active general dentists.

TABLE 6

Estimated Number of New Dental Hygienists Needed in Montana by 1985 by Subarea.

REFERENCES

1) Montana Commission on Post-Secondary Education, **Technical Group Report No. 5, Health Care Education,** May, 1974.

2) Personal Communication from Leoti J. Waite, State Certifying Officer, WICHE Program, The Montana University System.

3) Federal Register, **Criteria for Designation, Health Manpower Shortage Areas,** Vol. 43, No. 6, Tuesday, January 10, 1978.

4) **Health Resources Statistics, Health Manpower & Health Facilities, Op. Cit.**

5) Cole, R. B. & L. K. Cohen, "Dental Manpower" **Millbank Memorial Fund Quarterly,** Vol. 49, July, 1971.

6) Lotzkar, S. **et al,** "Experimental Program in Expanding Functions for Dental Assistants: Phase 1, Baseline and Phase 2, Training", **JADA,** Vol. 82, January, 1971.

7) **Health Resources Statistics, Health Manpower & Health Facilities, Op. Cit.**

8) U. S. Department of Health, Education, & Welfare, Public Health Service, Health Resources Administration, Bureau of Health Resources Development, **The Supply of Health Manpower 1970 Profiles & Projections to 1990**, December, 1974, DHEW Publication No. (HRA) 75-38.

5.3

SUMMARY

EMERGENCY MEDICAL SERVICES

The Emergency Medical Services (EMS) component defines the medical aspects of Basic Life Support (BLS), Advanced Life Support (ALS), Advanced Critical Life Support (ACLS), and the Mobile Intensive Care Unit (MICU), emphasizing the need for highly skilled professionals and paraprofessionals statewide.

The EMS system requires trained manpower, transportation, facilities, communication, and organization. Within the organizational structure, BLS and ALS protocols have been developed which address standards for the treatment of emergencies, licensing and certification of personnel and proper allocation of funds.

Documentation is provided regarding the incidence and prevalence of injury, illness and death in Montana which indicates a need for the EMS system. Additional comment is provided on service trends in EMS, contrasting current national and Montana data.

The component delineates cost factors, availability, accessibility, continuity, acceptability, and quality of care; inventory and utilization of equipment and personnel on a state and county level are considered by the Bureau of Emergency Medical Services.

The EMS component details the current problems associated with the delivery of emergency medical life support and transportation in Montana with a methodology for estimating service requirements.

EMERGENCY MEDICAL SERVICES

Goals:

1. Reduce suffering, disability and death from emergency situations by assuring readily accessible, high quality Emergency Medical Services for every Montana resident and visitor.
2. Assure adequate numbers of properly trained EMS personnel, properly staffed and equipped ambulances, properly staffed and equipped emergency facilities, and properly staffed communications equipment.
3. Assure the most efficient organization and use of EMS resources.

Objectives:

1. Within two years, establishment of an ongoing, comprehensive training and continuing education program for EMTs, physicians, nurses and the general public. This program should include regional training coordinators.
2. Within two years, organization of basic hospital-to-ambulance communications in all areas of Montana.
3. Within three years, financial support should be available to all areas of Montana so that the EMS system does not have to rely on federal grants.
4. Within two years, development of a State EMS plan which assesses the deficiencies and needs of an EMS system in Montana, according to established criteria. The plan should incorporate:
   a. A survey of the geographic placement of EMS manpower and an assessment of manpower and training needs;
   b. An ambulance placement strategy, coupled with a plan for the development of Quick Response Units (QRUs) and an air transportation system;
   c. Minimum standards and criteria for EMS facilities and assessment of current deficiencies;
   d. Delineation of the responsibilities of state and local governments in establishing and financially supporting an EMS system;
   e. A time-phased implementation schedule with a financial statement.
5. Within three years, evaluations of EMS systems, conducted on a continuing, statewide basis.
6. Within 10 years, dispatch of emergency vehicles and personnel should be conducted from a central location within each EMS service area.
7. Within 10 years, all areas of Montana should have central telephone access to the EMS system. This access number should be 911.
8. Within two years, an initial vertical categorization of Montana hospitals should be completed by the State EMS Bureau and Montana hospitals. This categorization should be continually updated and made available to physicians as a transfer guide to EMS facilities.
9. Due to the difficulty of obtaining continued funding for EMS programs, the MHSA recommends that county governments assess a one-mill levy by 1981 for EMS support.
10. The MHSA recommends that the EMS Bureau establish county councils and local medical directors in all Montana counties by 1985.

Recommended Review Criteria

1. For all future federal EMS grants in Montana, the state and federal governments should give higher priority to the development of Basic Life Support services statewide than to the development of Advanced Life Support services in the state. Further, the MHSA recommends that the particular needs of local areas, in addition to accessibility to medical facilities and personnel, be used as strong criteria in the establishment of funding priorities.
2. Emergency medical services should be considered a public service similar in priority to law enforcement and fire protection services. As such, funding for non-revenue producing aspects of EMS should be available through local governments.
3. EMS systems should be cost-efficient. Unnecessary duplication of communications, transportation and facilities should be avoided. In cities served by more than one hospital, centralization of emergency services should be studied.
4. Advanced Life Support systems should be implemented where financially feasible and/or beneficial. They should be implemented only in those communities whose Basic Life Support services are fully operational, completely organized and at a level where Advanced Life Support can be added with minimum cost. A financial feasibility study of these services should be conducted before they are established.
5. Both Basic and Advanced Life Support systems should be organized on a regional level; facilities within those regions should be categorized according to their critical care capabilities.
6. In rural areas, QRUs should be considered as an alternative to an ambulance service based in every community.
7. EMS should be available 24 hours a day. At least one hospital in each EMS system should have 24-hour physician coverage in the emergency room (ER). A sufficient number of ambulances should be available to respond to 95 percent of requests for assistance in the EMS area within no more than 30 minutes. An **Advanced** Life Support system should be available 24 hours a day, with 24-hour physician coverage in at least one hospital's emergency room. Physician specialists should be available on at least an on-call basis 24 hours a day. Advanced Life Support does not have to be available in every community.
8. People should be able to request emergency medical services and/or other emergency assistance through a single number telephone access, preferably the 911 system. At least one facility with minimum lifesaving capabilities should be within 60 minutes travel time from the scene of an emergency. The vertical categorization of facilities, combined with treatment protocol development by medical professionals, will assure that both basic stabilization is received by the patient and that, **if necessary,** arrangements are made for transfer of the patient. There should be ready access to specialized critical medical care units when dictated by the patient's condition.
9. EMS personnel responding to an emergency call should be dispatched by a trained dispatcher located at a center capable of coordinating all emergency assistance.
10. There should be a well-established secondary transportation system with plans, including transfer protocols, regarding the best method of transferring critical patients. Every effort must be made in transit to continue care at a level comparable or above that received at the hospital.

11. An EMS resource inventory should include a list of available followup and rehabilitative care. Standardized patient recordkeeping will ensure continuity.
12. A disaster plan, including all emergency agencies, should be established and tested at periodic intervals.
13. Public education and information, with emphasis on first-aid and CPR, should be an integral part of the EMS system. All patients should be treated immediately without prior inquiry regarding ability to pay.
14. All EMS personnel must be properly trained and certified. Because of the extreme importance of the initial few minutes in medical emergencies, the general public should be trained in CPR, first-aid and EMS system access. Public safety personnel (law enforcement officers, firemen, ski patrols, search and rescue units, etc.) should be trained to a level commensurate with their role in their community concerning EMS delivery. This training may include Advanced First-Aid, Crash Injury Management, or EMT training. State law requires that ambulance personnel be trained to at least Advanced First-Aid Level. EMT training is considered far superior and is highly recommended.
15. Personnel accompanying critical patients during secondary transfer should be critical care nurses, or, in some cases, paramedics or Advanced EMTs. Those individuals delivering prehospital Advanced Life Support must be physicians, registered nurses acting under proper authority, or properly trained and certified paramedics. Medical control of prehospital and interhospital Advanced Life Support is an absolute necessity. Prehospital ALS cannot be given independently of a well-organized EMS system with medical control. Emergency department nurses and physicians throughout the state should receive regular, updated instructions in the handling of emergencies. There should be continued peer review of quality of emergency medical care delivered. Dispatch personnel should receive instruction in dispatching techniques, radio communications and the handling of medical emergencies.
16. The EMS system should be periodically reviewed and evaluated for effectiveness and for quality of care rendered. This review should be conducted by the State EMS Bureau, the Professional Standards Review Organization, state and local medical directors, and appropriate hospital committees.
17. Hospital emergency rooms must meet minimum staffing and equipment standards set by the State Licensing and Certification Bureau.

1.0 Background

The term "Emergency Medical Services (EMS)" refers to a full range of medical and medically-related services provided on an emergency basis to people who might die or become permanently disabled without them. Because emergency medical services must be provided quickly and efficiently, they must be planned and maintained in a state of continual readiness. They must be organized into a system in which all components work effectively to meet the patient's total medical needs.

The full range of emergency medical services is listed below:

1. *The emergency is rapidly detected, located and reported.*
2. *Public safety personnel, properly equipped and staffed ambulances, and any other necessary emergency personnel are rapidly dispatched from a central location.*
3. *Proper emergency care is administered to the patient at the emergency scene.*
4. *The patient is transported to a medical facility; emergency medical care is continued enroute to the facility.*
5. *Ambulance personnel, public safety personnel and medical facility personnel communicate through an established communications system.*
6. *Adequate care is provided at the medical facility.*
7. *If necessary, the patient is transferred to a more specialized facility.*
8. *The system incorporates continual planning, coordination and evaluation.*[1]

Similar services are provided to all types of emergency patients — trauma, burn, poisoning, etc. The system described above is a **Basic Life Support** (BLS) system. Some EMS systems also can provide **Advanced Life Support** (ALS): The provision of care in the pre-hospital phase, which is typically considered hospital care, combined with improved interhospital transportation.

At both levels, five basic resources are necessary: **trained manpower, transportation, facilities, communications** and **organization.** Each of these is described below:

Trained Manpower — EMS manpower includes the public, law enforcement and fire departments, ski patrols, search and rescue squads and other public safety personnel; Quick Response Units, ambulance attendants, dispatchers, nurses, physicians, and a variety of support personnel in the hospital. All of these personnel require varying degrees of training to perform their specific job within the EMS system.

Transportation — There are two levels of EMS transportation — primary and secondary. Primary transportation includes the use of ambulances equipped and staffed to provide BLS to emergency patients at the scene and enroute to a medical facility. Primary transportation is generally thought of as ground transportation. Secondary transportation includes the vehicles and personnel involved in the transfer of patients from one facility to another and is generally considered the provision of Advanced Life Support. Secondary vehicles include air ambulances and advanced life support vehicles (often known as Mobile Intensive Care Units or MICU's), as well as primary transport vehicles doubling as secondary transport vehicles. In Montana the same vehicle may serve as both the primary and the secondary transport vehicle. However, when serving as a secondary transport vehicle, it is equipped and staffed at a level commensurate with the patient's medical needs.

During the past decade, in the pre-hospital phase of EMS, the emphasis has changed from "throw-and-go" (rapid transportation of the patient) to the provision of life saving and condition-stabilizing techniques at the scene.

Facilities — Definitive medical care for emergency patients is provided at medical facilities. Emergency capabilities at these facilities include emergency rooms or departments staffed by nurses and/or physicians, radiology and laboratory departments, critical care units and other support services. Because facilities differ in their capabilities to handle various emergencies, they are often categorized according to their capabilities.

EMS planners have defined two types of facility categorization: horizontal and vertical.

Horizontal categorization establishes several levels of care, such as basic, advanced and comprehensive, or Level I, Level II, and Level III (depending on the particular categorization scheme chosen by planners in that region or community). Horizontal categorization typically refers to the capability of the emergency department or emergency room.

Vertical categorization classifies hospitals according to the overall ability of the hospital to treat a variety of critical patients. The National Emergency Medical Services Systems Act of 1973, as amended in 1976, emphasizes seven critical care categories for inclusion in a vertical categorization scheme. Those categories include trauma, spinal cord injury, burns, acute cardiac care, high-risk infants, poisonings and drug overdose, acute alcohol intoxication and psychiatric emergencies.

In the hospital phase of EMS, increasing workloads have been brought about by a number of factors: population growth, increased incidence of chronic disease, higher accident rates, a more mobile population, unavailability of physicians after hours, access to emergency rooms 24 hours a day, fewer general practitioners, sophisticated and/or costly equipment in the hospital, third-party reimbursement for primary care provided in the emergency room (in constrast to non-reimbursement for similar care outside the emergency room), and the fear of malpractice suits.

Responding to increased utilization (and to improve the quality of emergency medical care) many hospitals have established separate outpatient facilities for non-emergency patients and have instituted 24-hour physician coverage of the ER.

Communications — An EMS system includes three basic types of communications:

- access to the system for people in need of emergency care
- dispatch and coordination of response to the emergency
- medical communications between ambulance personnel at the scene and physicians or nurses at the hospital.

Access to the system is generally obtained by telephone or, in some cases, by citizen band radios. People requesting help usually call either a single telephone number established specifically for emergencies or they call their police department, sheriff's office, fire department, hospital or ambulance services. The number 911 (pronounced nine-one-one) has been established as a nationwide emergency number.

Medical communications are conducted by telephone or over emergency medical services frequencies in a manner compatible with an established communications plan.

Organization — The multitude of agencies and individuals involved in an emergency medical services system necessitates excellent organization and planning. Careful delineation, prior to an emergency, of each agency's roles and responsibilities is essential to the success of an EMS system. The establishment of emergency medical services councils on a county and regional basis (see Figure 1) is one excellent mechanism of assuring interagency coordination and cooperation. EMS services must not only be coordinated within, but also between political boundaries such as cities, counties, and states.

All of those emergency personnel in a given area coordinate their efforts and pool their resources to provide the highest quality care to area residents at the least possible cost. Generally, EMS regions are organized around a major medical center. Federal EMS funding is provided to states for distribution on a regional basis.

A medical director of a local or a state program, is an essential element. Because emergency medical services must include in-hospital/inter-hospital care and evaluation, the medical director's role is vital to the system's success. All elements must be directed toward improved emergency patient care.

Evaluation of the EMS system has come to be more heavily emphasized in the past few years. The Federal government now demands proof of the effectiveness of improvements for which it has paid. In addition, there is a need to know where improvements are necessary. Evaluation efforts are in their infancy. For planning purposes, data on EMS need and effectiveness is a continual requirement.

The development of BLS and ALS protocols determine standards for treatment. Protocols:

1. assist in the treatment of medical emergencies by using well-defined, step-by-step procedures;
2. serve as a standard and tool for lay and professional education;
3. serve as a standard against which each participant's performance may be evaluated;
4. allow recommendations for improvements and/or additional education programs to be made.

Laws include those requiring the licensing or certification of ambulance, emergency and medical facilities personnel and coordination of the two-way radio communications frequencies. They protect people rendering first-aid at an emergency scene and establish penalties for people who knowingly fail to stop and help at the scene of a vehicle accident.

When public funds are allocated to EMS, the EMS organizational structure is responsible for the proper allocation of these funds.

2.0 Description of the Current Situation

2.1 Incidence, Prevalence, and Mortality

The need for any type of health care service is largely determined by the frequency of illness, injury or death within the population that the service covers. Reliable estimates of the number of illnesses or injuries which require an emergency response, or the number of deaths which may have been prevented by proper emergency medical care are difficult to obtain not only in Montana, but in the nation as a whole. Varying definitions of "emergency", inconsistent reporting of emergencies, use of the EMS system by non-emergency patients, and general lack of data relating to incidence and prevalence of illness and injury increase the likelihood of inaccurate estimates.

Mortality statistics relating to heart disease and accidents constitute one indicator of the need for emergency care. It is estimated that 5 to 20 percent of deaths resulting annually from heart disease might be prevented if the public were educated to recognize the symptoms of heart attacks and if comprehensive EMS systems were in place. Studies also suggest that deaths from vehicular accidents alone could be reduced by 15 to 20 percent by proper medical care at the scene of the accident or enroute to an emergency facility.[2]

In Montana, as in the United States as a whole, heart disease was the leading cause of death in 1976. Thirty-two percent (2,178)[3] of the 6,733 deaths in Montana in 1976 were attributed to heart disease. Acute myocardial infarction (heart attacks) accounted for 44.2 percent (963) of the heart disease deaths. However, it should be noted that heart disease death rates appear to be decreasing in Montana and nationwide.

Accidents, poisonings, and violence, the major cause of death for persons under 35 years of age, accounted for 11.3 percent (763) of the deaths in Montana in 1976. Motor vehicle accidents caused 291 deaths, or 4.3 percent of the total. Injuries from motor vehicle accidents in Montana rose over 9,000.[4] Alcohol was a major factor in Montana's highway deaths — more than one-third (132) of those persons killed on the state's road had been drinking.[5]

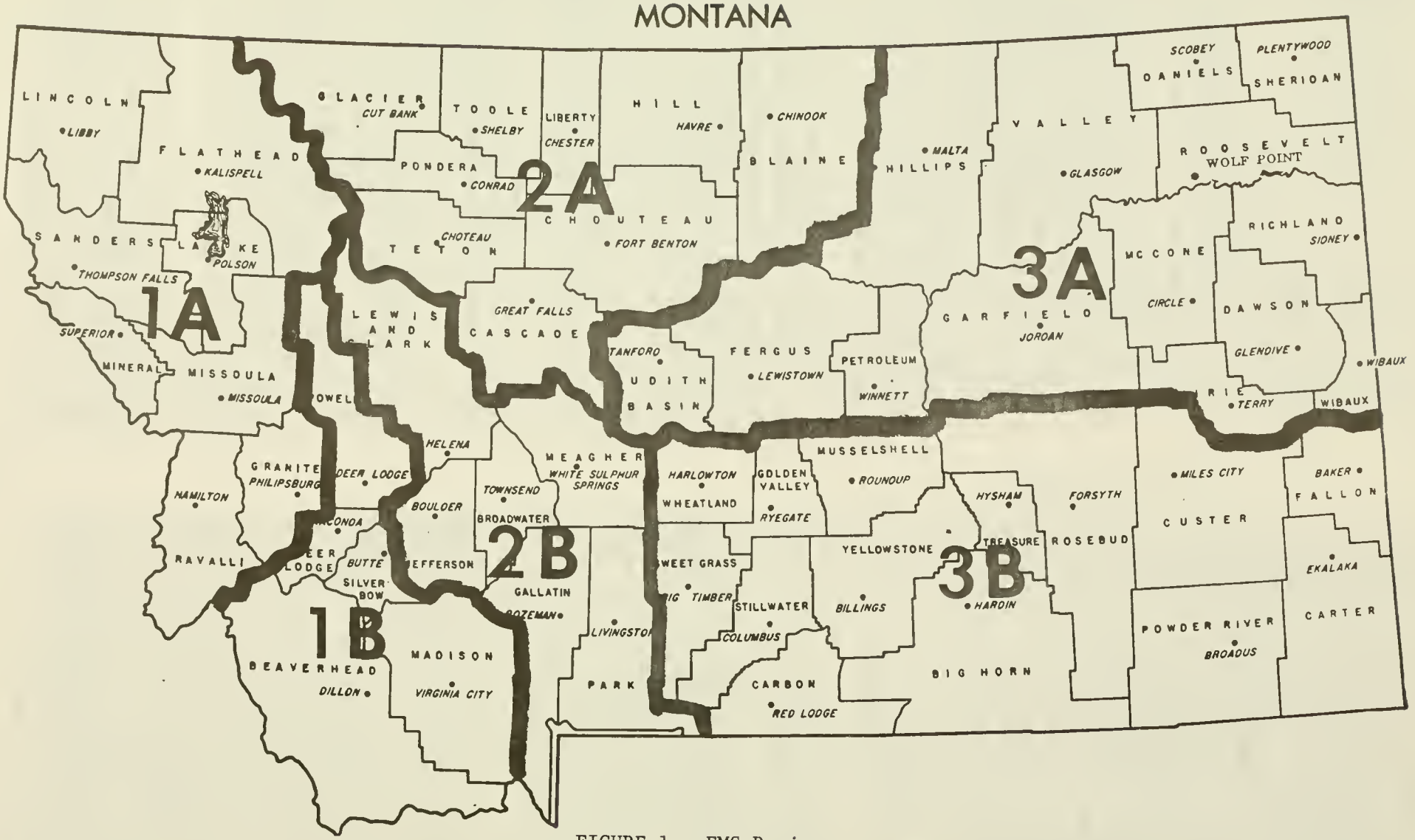


FIGURE 1 - EMS Regions
And Subregions as Specified by the EMS
Bureau, Montana Department of Health & Environmental Sciences

Montana's accident mortality rate is considerably higher than the national rate. In 1975, the overall accident rate nationwide was 48.4 per 100,000 population, while for Montana the rate was 78.1 per 100,000. The motor vehicle accident rate in 1975 was 21.5 nationally and 37.7 in Montana.[6]

Poisonings, both accident and self-inflicted, accounted for 46 deaths in Montana in 1976, and the poisoning death rate for the past five years in Montana has been considerably higher than the national rate.[7]

Thirty-eight persons died as the result of homicide and 129 persons committed suicide in Montana in 1976.[8]

Dispatcher training is provided through the Law Enforcement Academy in Bozeman and through the Central EMS Dispatch Center in Missoula.

Four physicians in Montana listed themselves as specialists in emergency medicine in a recent (1978) Health Planning and Resource Development Bureau survey.

Some continuing education in emergency medicine for physicians and hospital personnel is available through a variety of sources. However, a well-organized, uniform, statewide continuing education program has not been conducted.

The EMS Bureau and the Montana Heart Association have jointly sponsored several Advanced Cardiac Life Support (ACLS) instructor courses. ACLS Courses are continuing to be offered on a local and regional basis throughout the state.

Through a project initiated by the Mountain State Regional Medical Program, six learning center hospitals and some alternates have been established to provide educational services to all the hospitals in their districts. These training programs cover a broad range of medical topics, including emergency medical care.

Transportation

In 1976, Montana had 102 public ground ambulance services operating a total of 130 full-equipped vehicles. Table 1 provides a breakdown by region and category of service. In addition, there are eight industrially-owned services not included in the table because they provide services primarily for the particular firm that owns and operates them.

Golden Valley is the only county which does not have an ambulance service. Some of the ambulance services in Montana's smaller communities have problems staffing ambulances and meeting state ambulance licensing requirements.

Quick Response Units (QRUs) which are **non-transport teams** of trained and equipped emergency personnel, have been and are being established in several areas of Montana as an alternative to costly, difficult-to-staff ambulance services. Since an ambulance may be based some distance from an emergency in rural areas, QRUs may arrive earlier and provide BLS until an ambulance arrives.

A number of air taxi services in Montana provide medical transportation. Some out-of-state critical care centers specially staffed for a particular category of patient have air ambulances which they can fly into Montana to pick up that patient. Military planes also are available on request as air ambulances. However, there is no organized or coordinated air transportation or secondary transport system in Montana; hospitals sometimes experience delays in arranging for air transportation and some airplanes used in an ambulance capacity are ill-equipped for the job. No standards have been established for air ambulances in the State.

Facilities

Montana has 62 acute care hospitals serving the general population. Each hospital has an emergency room with at least a physician on call, as required by state medical facilities licensing laws.

The six hospitals listed below have physicians in the emergency room 24 hours a day:

- St. Patrick Hospital, Missoula
- Billings Deaconess Hospital, Billings
- St. Vincent Hospital, Billings
- Montana Deaconess Medical Center, Great Falls
- Columbus Hospital, Great Falls
- St. James Community Hospital, Butte

Table 2, American Hospital Association[9] statistics on emergency room utilization, shows that utilization in the United States has been increasing at a tremendous rate over the past 20 years. Between 1955 and 1970, utilization was increasing at about 20 percent per year. From 1975 to 1976, it was 7.2 percent. In Montana, the rate of increase in past years has been slightly higher, as has been the overall percentage of the population visiting the emergency room.

A specific source of information on hospital emergency room utilization in Montana is a survey conducted by the Montana Emergency Medical Services Bureau in January 1978. Table 3 presents the information gathered from this survey, including the approximate number of emergency room visits statewide, in the three regions and a breakdown of types of emergencies by critical care category.

The survey shows that 12.4 percent of those people visiting the emergency room were admitted to the hospital. Significantly, those admissions constituted 23.6 percent of all hospital admissions.

Caution should be exercised in relying on hospital emergency room utilization data to gauge the need for emergency medical services, as non-emergency patients are often treated in the emergency room. Also, current utilization does not necessarily reflect demand or need.

The EMS Bureau is conducting several pilot studies to obtain data about EMS from ambulance services and hospitals in the state. To date, this data is of little use because of low return rates from the reporting hospitals.

The State's critical care capabilities for high-risk infants, cardiac patients, burn patients and poison victims, along with those for trauma, spinal cord injury, drug overdose, acute alcohol intoxication, and psychiatric emergencies will be addressed in the vertical categorization plan being developed by the EMS Bureau in conjunction with the Montana Hospital Association and the Montana Medical Association. It is important to note that some emergency psychiatric services are delivered by mental health professionals outside the traditional EMS network. Coordination between the EMS system and Mental Health Centers is essential.

Communications

Six "911" telephone access centers are located in Montana at Billings, Choteau, Conrad, Glendive, Great Falls, and Missoula. In addition, a number of other areas in the state have single access through a number other than 911. Elsewhere, access to the EMS system is obtained through police, sheriff or fire departments, individual ambulance services, or hospitals.

More than 95 percent of the public ambulances in the state are equipped with some form of two-way radio capability. Many hospitals also have hospital-to-ambulance communications capabilities. However, EMS Northeastern and Southwestern Regions are lacking an established hospital-to-ambulance communications system.

Hospital-to-hospital communications are generally conducted over the telephone. Radio equipment is used as an emergency or back-up system for this capability. The radio link between hospitals is often impaired or made impossible by geographic barriers. An integrated microwave system can solve this problem. Such a system has been established in Emergency Region I, Northwestern Montana.

	Region 1	Region 2	Region 3	Total
Ambulance Services				
Private	6	4	7	17
Local Government	7	10	15	32
Volunteer	21	11	16	48
Other	0	2	3	5
TOTAL	34	27	41	102
Ambulance Vehicles (year)				
1960 and earlier	12	5	3	20
1961 - 1965	7	7	11	25
1966 - 1970	13	13	17	43
1971 - 1975	15	14	17	46
TOTAL	47	39	48	134
Ambulance Vehicles (type)				
Suburban	5	7	6	18
Coach	17	17	13	47
Van	15	9	23	47
Station Wagon	5	3	5	13
Modular and other	5	3	1	9
TOTAL	47	39	48	134
Vehicle Design & Equipment				
Meets State Design Criteria	25	20	22	67
Minimum Equipment by State Law	47	39	48	134
Extrication Equipment	10	5	10	25
Cardiac Monitoring Equipment	0	2	0	2
Personnel				
Services with:				
No EMTs	2	2	8	12
1% - 25% EMTs	7	6	6	19
26% - 50% EMTs	11	7	11	29
51% - 75% EMTs	7	5	7	19
76% - 100% EMTs	7	7	8	22

NOTE: All non-EMTs are trained to a level of Red Cross Advanced First Aid as required by State Law.

TABLE 1 - Summary of Existing
Ambulance Capability in Montana by EMS Region
(1976)

SOURCE: Montana Emergency Medical Services Bureau

Organization

A draft organizational chart of state level emergency medical services is included as Figure 2. This chart demonstrates the complexity of emergency medical services and the variety of agencies and individuals involved. Working relationships have been well established among the EMS Bureau, the EMS Committee of the Montana Medical Association, the Montana Heart Association, and the Wrangler Division of the American National Red Cross. Co-sponsorship of education programs for the general public and for professionals is common.

Currently, there is a statewide medical director and also critical care consultants for the EMS Bureau. These individuals are paid with Federal EMS Act funds. In addition, there are medical directors and critical care consultants in each subregion which has received Federal EMS Act funding. The state medical director is responsible for liaison and coordination of system activities.

EMS Councils, designed to facilitate inter-agency cooperation and planning, are in place in 32 of the 56 counties. (Figure 3) Regional EMS Councils are active only in Region 2A at this time, but are planned in all funded regions.

Each county is encouraged to appoint one key individual who is generally responsible for EMS activities within the county. Ideally, this should be a paid position which also functions with other emergency activities.

Written disaster plans, standard recordkeeping systems and mutual aid agreements are important ingredients at a local and a state level.

The EMS Bureau, the agency officially designated by state law as responsible for EMS system development, has received HEW funds for improvement of EMS. These funds are available only on a regional basis; thus, funds have not been available statewide. The EMS Bureau and the Montana Division of Highway Traffic Safety have jointly decided to expend Department of Transportation EMS funds in those regions not receiving EMS Act funding.

There are several levels of HEW funding available. Section 1202 provides one year of funding to plan a Basic Life Support system and now provides one year of funding to plan an Advanced Life Support system. Section 1203 provides two years of funding on a Regional Basis for the development of a Basic Life Support system and Section 1204 provides two years of funding for the development of an Advanced Life

TABLE 2
HOSPITAL EMERGENCY ROOM VISITS
1955, 1970, 1974, 1975, & 1976

	1955*	1970*	1974	1975	1976
United States	10,465,788	42,692,761	71,033,863	73,448,051	76,674,145
Visits/1000 persons	64	212	N/A	288	278
% Increase		20.5 avg. annual (307.9 over 15 yrs)	16.6 avg. annual (66.4 over 4 years)	6.5	7.2
Mountain States	N/A	N/A	2,819,783	3,003,078	3,219,985
Visits/1000 persons	N/A	N/A	N/A	320	300
% Increase from previous year	N/A	N/A	N/A	6.5	7.2
MONTANA	N/A	N/A	191,646	222,979	240,133
Visits/1000 persons	N/A	N/A	N/A	320	300
% Increase from previous year	N/A	N/A	N/A	16.3	7.7

Note: Overall increase from 1955 to 1976: **632.6%**

*Source: American Hospital Association, **Emergency Services, The Hospital Emergency Department in an Emergency Care System**, Chicago, Illinois, 1972.

Source: American Hospital Association, **Hospital Statistics**, Chicago, Illinois, 1974, 1975, 1976.

Support system. All areas of the state have received section 1202 funding. Regions 1A and 3B have each received two years of 1203 funding. Region 2A has received one year of 1203 funding. For the fiscal year beginning July 1, 1978, the following grant applications were submitted:

Region 1A - Section 1204 (1)
Region 3B - Section 1202 (2)
Region 1B - Section 1203 (1)

However, only Region 1A received funding. Table 4 shows the dollar amounts received by each region.

The dilemma is that emergency medical services are desperately needed in a rural state. However, this is also where they are the most difficult to provide. Because they see few critical emergencies each year, rural, volunteer ambulance attendants' skills deteriorate quickly if not provided regular, extensive practice sessions and continuing education.

A rural nurse or physician usually leaves a rural community without medical coverage while they attend training sessions. Skill degradation among medical professionals presents an enormous problem.

The dispersal of personnel and rugged terrain makes it clearly impossible to provide adequate ambulance service. Economics, lack of trained personnel and low volume of emergency calls severely limit the placement of ambulances in each community and make the strategic location of QRUs mandatory.

The number of different telephone companies (20 operating in Montana) makes difficult the establishment of single access telephone numbers.

Lack of financing at a state and a local level for improved emergency medical services is a major impediment.

2.2 Current Inventory and Utilization Levels

The Montana EMS system is divided into three regions and six subregions, as shown in Figure 1. These regions differ from Health Systems Agency areas and the Governor's planning regions. The EMS regions were chosen on the basis of medical care service patterns and the need for emergency care as well as funding feasibility under federal EMS grants. Basically, the regional lines are drawn from north to south, dividing the state into thirds. Each region has a main medical center (as required by the Federal EMS Act); Missoula serves the western third, Great Falls the central area, and Billings the eastern portion of the state. Kalispell, Butte, Helena, Bozeman, Havre, Lewistown, Glasgow and Miles City are considered secondary medical centers by the EMS Bureau.

Trained Manpower

During 1977 more than 10,000 Montana citizens were trained to perform CPR.[10] In 1978 the number of people taking CPR classes doubled.

EMT training courses are conducted in local communities and at educational institutions throughout the state. This course, along with the successful completion of a nationally accepted proficiency examination, is required before a person can be certified as a Basic EMT. In accordance with state law, certification is accomplished by the Montana Board of Medical Examiners with the assistance of the EMS Bureau. Recertification is contingent upon accumulation of continuing education points and recommendations by a local EMT Course Committee.

A longer, more comprehensive course is specified for Advanced EMT certification. Advanced EMT training is based upon a nationally accepted curriculum. It is possible there

TABLE 3
EMS BUREAU SURVEY OF MONTANA HOSPITALS — 1977

	Region 1A[1]	Region 1B[2]	Region 1	Region 2A[3]	Region 2B	Region 2	Region 3A[4]	Region 3B	Region 3	MONTANA
ER Visits	46,966	30,792	77,758	48,131	20,687	68,818	23,426	53,855	77,281	223,857
Admits from ER	6,558	3,664	10,222	8,474	3,166	11,640	1,763	5,894	7,657	29,519
Hospital Admissions	31,272	14,746	46,018	29,477	14,419	43,896	10,463	24,965	35,428	125,342
Motor Vehicle Accidents	675	460	1,135	147	296	443	268	443	711	2,289
Single-born Immature infants	108	43	151	84	71	155	23	100	123	429
Head Injuries	508	154	662	497	232	729	213	329	542	1,933
# Died	8	0	8	12	0	12	8	11	19	39
Spinal Injuries	13	4	17	23	5	28	4	19	23	68
# Died	0	0	0	2	2	4	0	0	0	4
Suicides/Attempted Suicides	119	32	151	10	24	34	36	65	101	286
# Died	1	1	2	1	0	1	0	2	2	5
Burns	22	9	31	33	9	42	16	23	39	112
# Died	0	0	0	0	1	1	1	1	2	3
Poisonings	218	84	302	260	139	399	159	204	363	1,064
# Died	2	0	2	4	1	5	1	1	2	9

(1) Hamilton missing.
(2) Dillon, Ennis, Sheridan missing. 87% of beds included.
(3) Browning and Choteau missing. 98% of beds included.
(4) Glasgow missing. 79% of beds included.
(5) Baker, Circle, Columbus, Forsyth, Hardin, Red Lodge missing. 82% of beds included.

will be several levels of advanced EMT certification in the future, allowing paramedics to function more proficiently. At this time, paramedic courses are not being taught in Montana and no one has been certified as an Advanced EMT by the Montana Board of Medical Examiners. "Plans are now underway for recommendation to the Board of Medical Examiners regarding intermediate levels of advanced certification to be consistent with national guidelines."[1]

3.0 Estimated Future Resource Requirements

Trained Manpower

There is a continual need in Montana for training and continuing education for emergency medical technicians, emergency physicians, emergency nurses, emergency dispatchers, and other EMS personnel. See Table 5.

The EMS Bureau estimates a need for approximately 12 EMTs per ambulance service. Montana has 102 ambulance services, indicating a need for about 1224 EMTs. A few Montana hospitals also employ EMTs, as do Quick Response Units and the Montana EMS Bureau.

There are several problems in using the number of ambulance services to determine the need for EMTs. Forty-eight of these services rely on volunteer personnel attendants and many volunteer ambulance attendants are trained only to the minimum Advanced Red Cross training level. (Volunteer ambulance services have difficulty obtaining a minimum number of attendants.)

In the past, the EMS Bureau has emphasized the training of as many EMTs as possible. This resulted in a large number of people trained as EMTs who were not using their skills as ambulance attendants, members of QRUs, or hospital personnel. The Bureau is re-evaluating training needs, emphasizing the adequate training of EMTs actively involved in

Type of Grant	Amount Funded
Planning Grant 1202[1]	$118,235
First Year 1203 Grant[2]	$545,703
Second Year 1203 Grant[3]	$423,326
First Year 1203 Grant[4]	$325,350
First Year 1204 Grant[5]	$378,609

1) During FY 75-76, this grant provided funds for 1202 planning activities in EMS Regions 1B, 2A, 2B, and 3B; it was subsequently extended an additional year.
2) This grant, awarded for FY 75-76, provided funds for Basic Life Support implementation in Regions 1A and 3B as well as state overview activities.
3) This grant provided funds in FY 76-77 for Basic Life Support implementation in Regions 1A and 3B as well as state overview activities. It was extended to the next fiscal year.
4) This grant provided funds during FY 78-79 for Basic Life Support implementation in Region 2A as well as state overview activities.
5) This grant provided funds during FY 78-79 for Advanced Life Support implementation in Region 1A as well as state overview activities.

TABLE 4 - Federal EMS Funds Received By Montana

Source: Unpublished Data from the EMS Bureau

Geographical Region & Year	Number of Ambulation Personnel					
	EMT	ANRC	RN	LPN	OTHER	TOTALS
REGION 1:						
1976	279 (48.1 %)	211 (36.37%)	16 (2.75%)	2 (.34%)	72 (12.41%)	580
1977	317 (54.65%)	183 (31.55%)	8 (1.37%)	2 (.34%)	70 (12.06%)	580
REGION 2:						
1976	202 (63.12%)	102 (31.87%)	12 (3.75%)	3 (.93%)	1 (.31%)	320
1977	221 (63.14%)	121 (34.57%)	4 (1.14%)	4 (1.14%)	0	350
REGION 3:						
1976	253 (57.5 %)	157 (35.68%)	25 (5.68%)	1 (.22%)	4 (.97%)	440
1977	288 (62.20%)	142 (30.66%)	29 (6.26%)	2 (.43%)	2 (.43%)	463
STATEWIDE:						
1976	734 (54.77%)	470 (35.07%)	53 (3.95%)	6 (.44%)	77 (5.74%)	1,340
1977	826 (59.29%)	446 (32.01%)	41 (2.94%)	8 (.57%)	72 (5.16%)	1,393

TABLE 5 - Number of Ambulance Personnel And Their Training by EMS Region

Source: Unpublished Data from 1977 Ambulance License Applications

the EMS system. The new EMT examination process has strongly underlined the need for better EMT original training and practical, skills-oriented continuing education. Related to this, current minimum standards for EMT training may not be adequate.

EMT training is expensive for the individual trainee, particularly volunteers. Costs borne by the volunteer include travel to 81 hours of courses and a $35 testing fee.

A geographically based EMT needs assessment is required as is an ambulance placement and QRU placement strategy.

The need for EMS dispatchers and dispatcher training also should be assessed, as should the need for physicians and nurses with emergency medicine specialization. The physician manpower component of the Montana Health Systems Plan indicates a need for primary care in 14 counties. It is desirable that EMS transportation and manpower systems in affected counties be developed to the maximum extent.

There is a definite need for improved emergency care training for physicians and nurses in Montana, particularly in rural areas. There should be ACLS training for physicians and nurses active in primary care. There should be emergency department nurse training programs and trauma nurse training programs throughout the state. There should be practical skills training programs for physicians as well as updated training sessions in each of the critical care areas. Proper early physician management of the patient is a vital component of an effective EMS system.

Transportation

Currently, there is no comprehensive assessment of statewide EMS transportation needs — primary, secondary, and rescue. There is a need for a written placement strategy for both ambulances and QRUs, followed by a financial plan to implement that strategy. The Emergency Medical Services Bureau has drafts of placement strategies and is working to improve and finalize them.

Ambulance inspections indicate a need for updating some emergency vehicles. The EMS Bureau, through Federal provisions, has funds for such modernization. It determines its funding priorities with a formula based on the percentage of Federal land within ambulance services' area; the distance to other ambulance services, the number of square miles in an ambulance service's area, the population of the ambulance service's base community, and the current county ambulance funding level.

Standards are needed for the development of secondary transportation systems, such as ALS vehicles and air ambulances. Alternatives to costly ambulance services need to be explored in detail and proposals made for the statewide institution of QRUs.

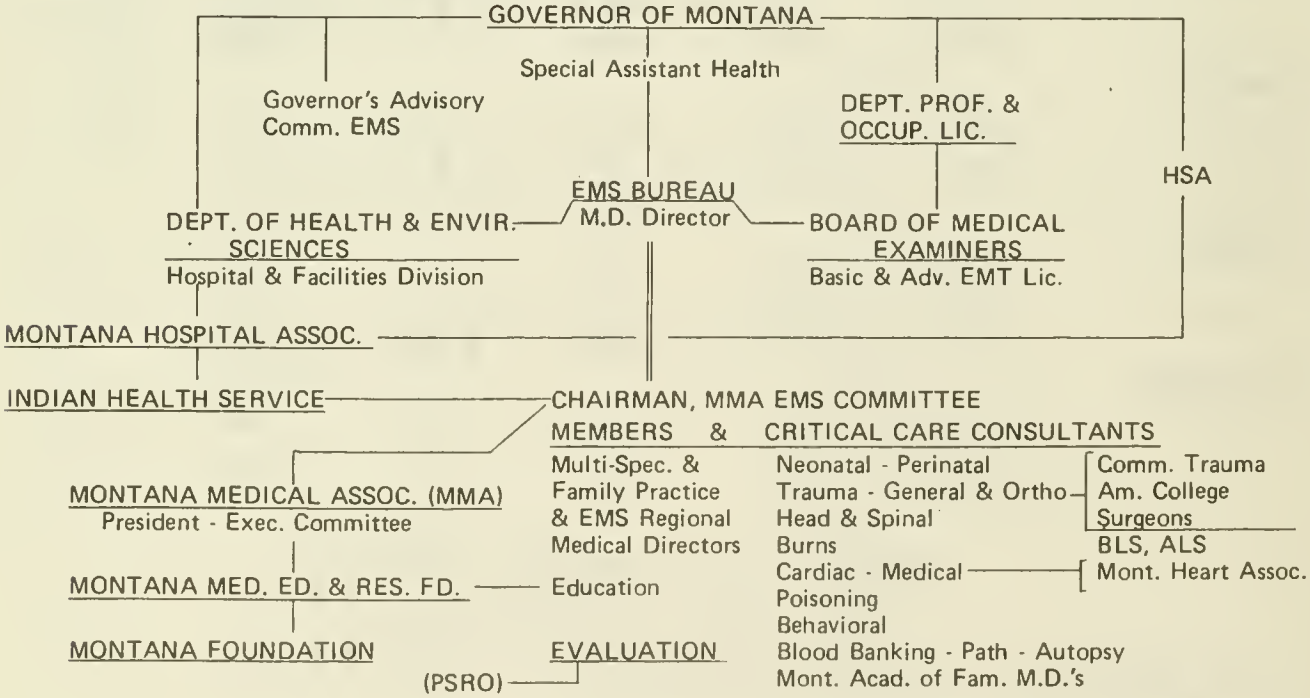
Facilities

The EMS Bureau currently is conducting a survey of emergency and critical care capabilities in Montana hospitals. When completed, this survey will be used to vertically categorize the hospitals. It should also provide information about EMS facility needs.

Communications

A single number access (other than 911) is available to a large portion of the population. In many areas of the state, people requesting emergency assistance are faced with the time-consuming decision of where to call. This is especially difficult for visitors. There is a need to impiement a central telephone number and dispatch system in each county in Montana. Occasionally, counties may combine dispatch facilities. It is important that each resident and visitor have a single access telephone number which assures the proper dispatch of all emergency aid. There is a need to coordinate with other Federal funding agencies (e.g., Law Enforcement Assistance Administration) to assure a uniform approach toward the adoption of the 911 number statewide. In many counties, public safety and EMS personnel coordination is needed in dispatching emergency services. Statewide implementation of high band emergency radio band capabilities also is required.

FIGURE 2 - Organizations Involved In Providing EMS Services at the State Level



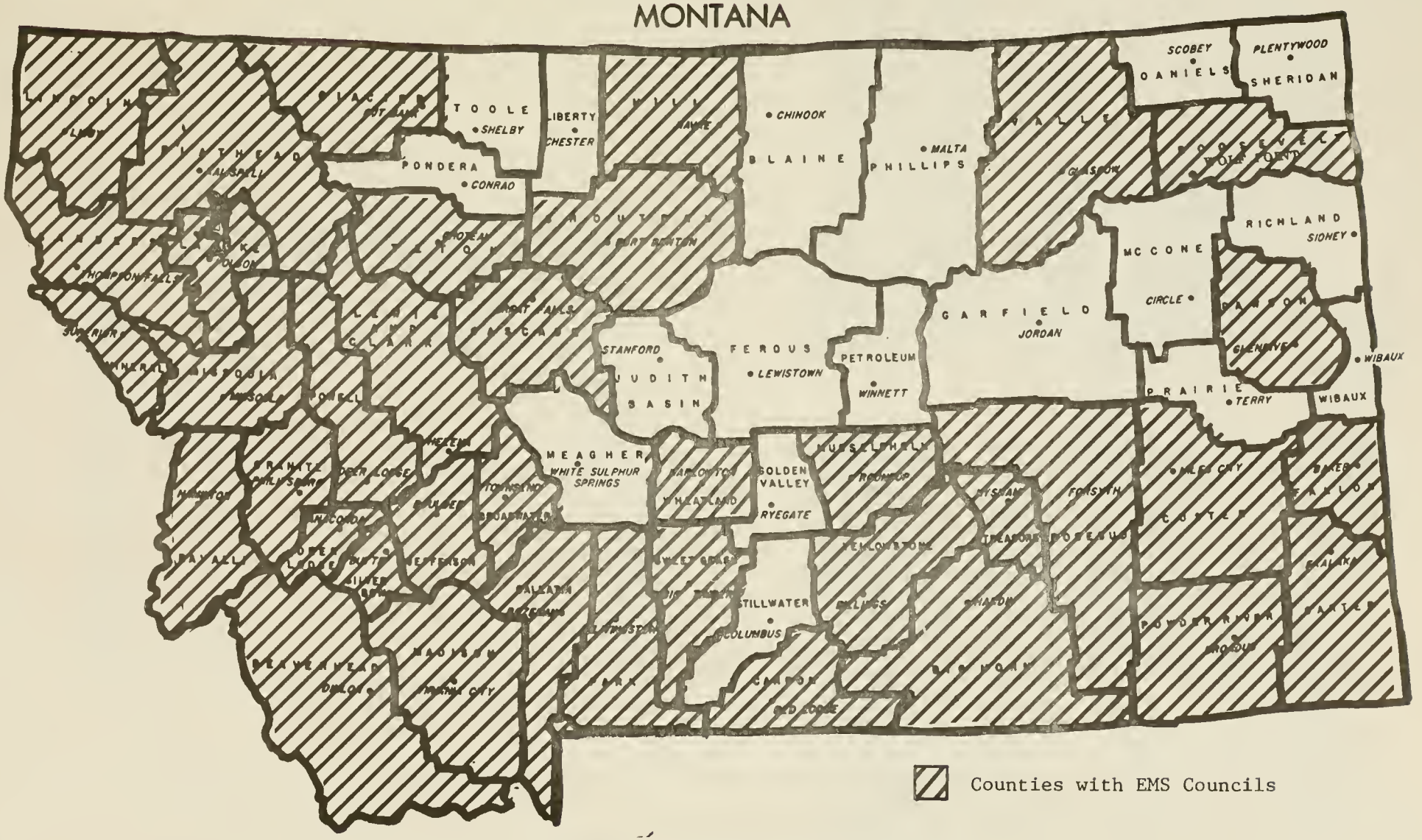


FIGURE 3 - Counties with EMS Councils

Organization

One of the most pressing needs of the EMS system in Montana is continuation funding. Applying for federal EMS funds is a time consuming and often frustrating task, with ultimate control of priorities and criteria in the hands of the federal government instead of the state or local areas. It is necessary for Montana to establish funding priorities and criteria of its own. These priorities must include statewide establishment of BLS services and the criteria must include accessibility to health care services.

There is a need for additional formalized regional emergency medical services councils. This council or entity should have a formal relationship with the EMS Bureau, but the Bureau should not actually operate EMS systems. There is a need for a system of training coordinators to work with ambulance services and other EMS providers to upgrade capabilities.

There is a need for a County EMS Coordinator in each county or shared among several counties. EMS councils are needed in many counties and are in desperate need of revitalization in others. Technical assistance from the EMS Bureau needs to be expanded and upgraded.

There is a need for a statewide EMS plan which clearly delineates all needs and makes specific plans for corrections. This should be a specific, implementable plan which can be presented to the Montana legislature. This plan should clearly specify funding needs. There is a definite need for more adequate funding of emergency medical services at both the state and the local level. Standards regarding the development of ALS systems should be made a part of the plan.

REFERENCES

1. Montana Emergency Medical Services Bureau.
2. Sadler, Alfred M.; Sadler, Blair L.; and Webb, Samuel B.; **Emergency Medical Care: The Neglected Public Service, The Connecticut Experience,** p. 4.
3. Bureau of Records and Statistics, Montana Department of Health and Environmental Sciences, **Montana Vital Statistics,** 1976, p. 26.
4. Montana Highway Patrol, **Annual Report,** 1976.
5. **Ibid.**
6. Monthly Vital Statistics Department, National Center for Health Statistics, Vol. 25, Number 11, Supplement, February 11, 1977.
7. Bureau of Records and Statistics, **op cit,** 1972-1976.
8. **Ibid,** 1976.
9. American Hospital Association, **Hospital Statistics 1974-1976,** and **The Hospital Emergency Department in an Emergency Care System,** 1972.
10. Telephone conversation with EMS Bureau, Montana Department of Health and Environmental Sciences.
11. Emergency Medical Services Bureau, Montana Department of Health and Environmental Sciences, **Regional Abstracts,** 1977.

CHAPTER 6
PRE-CARE & PREVENTIVE HEALTH SERVICES

Pre-care and preventive services include measures taken to preserve healthful conditions as well as measures taken by individuals to improve and maintain their own levels of well-being. In this chapter only one service (preventive dental services) is addressed. As shown in Table 1, this component can be categorized as both community health promotion, and as prevention and detection services. Like other preventive services, it is usually found in community based settings. The National Guidelines, as yet, do not address this component of health care.

	SERVICES Preventive Dental Services
CATEGORIES OF SERVICE	
Community Health Promotion	x
Prevention & Detection	x
Diagnosis & Treatment	
Habilitation & Rehabilitation	
Maintenance Services	
Support Services	
Enabling Services	
SETTINGS	
Community	x
Home	
Mobile	
Ambulatory	
Short-Stay	
Long Stay	
Free Standing Support	

TABLE 1

Subject, Categories of Services and Settings Addressed in the Pre-Care and Preventive Health Services Components.

6.1
SUMMARY

PREVENTIVE DENTAL SERVICES

This component addresses preventive dental health programs, provides background data for the assumption that such programs are necessary, and details several alternative methods of achieving a twenty (20) to fifty (50) percent reduction in dental cases. The fact that tooth decay and periodontal disease are universal ailments which cause enormous suffering and expense lends credibility to the importance of preventive dental programs to reduce the incidences of these diseases.

The efficiency of fluoride in natural and artificially treated water supplies has been adequately demonstrated and documented. Other methods of dispensing fluorides are:

1. Mouth Rinses
2. Fluoride Toothpastes
3. Topical Fluoride Applications

The most effective is the fluoridation of public water supplies. Even though almost half the nation drinks fluoridated water, its acceptance in Montana is severely limited. Educating the public as to the low-cost, low-risk and high degree of effectiveness of fluoridation is necessary. Studies by various communities have borne out the beneficial long-term effects of fluoridation.

In addition to fluoridation and dental health education, dental screening and periodic dental examination are necessary adjuncts to effect preventive dental health programs. These preventive dental health strategies are predicated on community and state acceptance of the dental health problems in Montana and the long-term benefits to be derived from their implementation.

PREVENTIVE DENTAL SERVICES

Goal:

The number of children up to 14 years of age with dental caries should be reduced by at least 25 percent.

Objectives:

1) In areas where public water supplies are not fluoridated, local governments should be encouraged to study the feasibility of and solicit support for water fluoridation as a public health measure.
2) By 1985, fluoride mouth rinse programs should be available to all elementary school children not receiving the benefits of fluoridation elsewhere.
3) By 1985, an established dental health program involving screening and referral services should exist for all elementary school children in Montana. Presently about 20 percent of the elementary school population receive these services. A statewide screening program would require 10 hygienists to cover Montana.
4) By 1985, comprehensive dental education programs should be serving 90 percent of the elementary school population in Montana; approximately 50 percent of Montana's elementary school population now receive these benefits. In addition, the Office of Public Instruction and the Bureau of Dental Health should encourage the development of a dental hygiene course in the curriculum of all elementary schools.
5) By 1985, a pilot dental education program directed to expectant mothers should be initiated. This program should stress the dietary practices which are not detrimental to the dental health of the infant.

1.0 Background

Dental health should be recognized as an essential component of the comprehensive health care system. It has been scientifically demonstrated that early and sustained preventive efforts and treatment, which generally can be easily applied and instituted at relatively low costs, will reduce serious dental problems and costly dental treatment later in life. All Montanans should be aware of the benefits attributable to preventive dental measures and have access to these measures, especially school-aged children.

The purpose of this document is to describe the publicly sponsored dental prevention programs in Montana and to recommend MHSA policy toward the future expansion and maintenance of these efforts. The influence of the Montana Health Systems Agency in this area is indirect, but this plan could be used in three ways. First, it could be used to guide MHSA decisions and recommendations on A-95 comments and on the review of Proposed Uses of Federal Funds (PUFF). Second, it could be used to initiate local programs through the allocation of Area Health Development Funds, if and when they become available. Finally, this document could be used to obtain legislative support for those dental prevention programs deemed most important.

Consequently, this document will not address those preventive services routinely and regularly offered by individual dentists in their practices nor the delivery of diagnostic and treatment services. The latter is implicitly addressed in the Dental Manpower component.

Preventive dental activities are important because next to the common cold, tooth decay and gum disease are the most universal diseases suffered by mankind, despite the fact that they are two of the most preventable diseases. The extent of oral health problems is demonstrated by the following statistics generated from the National Center for Health Statistics:

- 50 percent of all adults over 55 years of age have no natural teeth,
- 30 percent of the children under 18 years of age have never been to a dentist, and 14 percent of the total population have never received dental care,
- at age six, one out of every eight children has at least one decayed permanent tooth,
- by age 11, three out of every four children have tooth decay, and
- by the mid-teen years, 95 percent of all youth have an average of nine decayed, missing, or filled teeth. [1]

Similarly, the Committee on Nutrition in 1972 concluded that dental caries is one of the most prevalent diseases for all age groups beyond infancy. A ten-state nutrition survey (Center for Disease Control) conducted in 1972 found that by age 10, more than 80 percent of all children surveyed in 1970 and 1971 had caries in permanent teeth. [2]

Although no statistics are available, dental problems may also afflict the very young. Nursing bottle caries, nursing bottle syndrome, and bottle-propping caries are all synonomous terms for a devastating condition rendering many children under three years of age dental cripples. When an infant is given a bottle as a pacifier, often at bed time or during naps, the decreased rate of salivary flow during sleep renders the dentition more susceptible to acid production by plaque bacteria, resulting in the destruction of the anterior teeth. The lactose naturally present in cow's milk is not the major threat with respect to nursing bottle caries. Believed to be the most damaging are the sweetened fruit-flavored drinks and sweetened fruit juices put into an infant's bottle. Also suspect is the presence of sucrose and corn syrup solids in a number of soy isolate-based and other milk-free formulas. [3]

Periodontal disease involves an infection of the gums and bones, which, if left untreated, leads to the deterioration of the bone and eventual loss of the teeth. The World Health Organization estimates that 80 percent of all teeth lost among people over 30 years of age is due to periodontitis. Proper dental practices acquired early in life, such as brushing, flossing, proper nutrition, and regular professional checkups, can prevent the onset of periodontal disease. Orthodontic care is also essential in preventing periodontal disease since properly positioned teeth aid in proper brushing and flossing.

Most dental problems can be avoided through primary and secondary prevention measures. These preventive measures include:

- the use of fluorides,
- dental education programs concentrating on getting people to adopt proper nutritional practices, to brush after meals, and to floss daily, and
- dental examinations directed at early case finding and follow-up care.

1.1 Fluoridation

Fluoride is the most effective agent available to prevent tooth decay. Fluoride is one of many elements naturally occurring in the earth, and is found in varying amounts in almost all waters and soils.

The ability of fluoride to act as an anti-caries mechanism appears to be threefold and is related to whether it is a systemic fluoride or a topical fluoride. Systemic fluorides are ingested, usually through the water supply or as a liquid or tablet. This fluoride acts by changing the chemical composition of the tooth by hardening of tooth enamel, thus making the tooth less susceptible to decay. Enamel protects the tooth by resisting acid decomposition. The acid is produced by sugar-eating bacteria which congregate on the surface of the tooth. Systemic fluorides mostly affect developing teeth; little benefit accrues to the teeth once they are developed and have erupted into the mouth. Topical fluorides are those applied to the erupted teeth in the mouth. This type of fluoride can be applied by a dentist, by self application, or as a mouth rinse. The fluoride strengthens, or remineralizes, the tooth by counteracting the decalcification process of bacterial plaque. Finally, fluoride can act as an enzyme inhibitor by interfering with acid production on the tooth surface, thus decreasing the solubility of the tooth.

The benefits attributable to fluoride use are not limited to pre-teenage children. Although fluoride use is most beneficial during the developmental stage of teeth, it is still of some benefit to older people. For instance, fluoride mouth rinses have proven effective in reducing the incidence of cervical and exposed tooth root caries of the elderly.

Several methods of systemic and topical fluoridation are available. These include:

- fluoridating public water supplies,
- the daily use of fluoride tablets or vitamin tablets containing fluoride,
- fluoride mouth rinses,
- daily use of fluoride toothpastes, and
- topical fluoride applications done in the dentist's office.

Table 1 compares the cost and potential effectiveness of these methods.

Water fluoridation continues to emerge as a controversial issue even though about 105,000,000 Americans drink fluoridated water. There is considerable debate in Montana on whether fluoridated water supplies are necessary. A bill requiring mandatory water fluoridation for Montana cities with populations of over 1,000 was discussed in the 1971 legislative session but failed passage. Therefore, there is no current mandatory requirement in Montana for fluoridated water supplies.

Water fluoridation is supported by the American Dental Association, American Medical Association, American Heart Association, National Cancer Institute, American Cancer Society, and the U. S. Public Health Service.

Water fluoridation is advantageous in that it is generally inexpensive and the entire community benefits from it regardless of economic or educational level, individual motivation, or the availability of dental manpower. No direct action is required of the individual. A major disadvantage of water fluoridation is that its application is limited to areas served by central water supplies.

Table 2 shows the variance in the costs of fluoridation in selected Montana communities. The per capita cost varies from $.06 to $1.35 per person per year. The American Dental Association estimates that water fluoridation costs about $.20 per capita annually. The state average, $.19, is 5 percent lower than the ADA's estimate.

Fluoride mouth rinse programs could provide significant reductions in dental decay in children for less than $.50 per year for each child. A large number of studies have demonstrated that a supervised use of a sodium fluoride mouth rinse (0.05 percent daily or 0.2 percent weekly) at school or at home may produce a 20 to 50 percent reduction in caries experience. [4]

Topical fluoride is typically applied in the dentist's office. The cost and the number of times the treatment is given depends upon the age of the child, the type of fluoride used and the amount of fluoridation in the water supply. However, in areas of unfluoridated water, this treatment is recommended twice yearly. This method requires a thorough cleaning of the teeth before the fluoride is applied. Although professionally applied fluorides will reduce tooth decay by 30 - 40 percent, it is an expensive method both from the

TABLE 1

A Comparison of the Unit Costs and Potential Effectiveness of Different Fluoride Programs.

Method of Fluoridation	Dollar Cost/Person/Year	Potential Reduction in Decay
Water Supply	$ .20 [1]	50-60%
Fluoride Mouth Rinse	$ .50	20-50% [2]
Fluoride Tablets	$5.48 [3]	Potentially same as water fluoridation [4]
Topical Fluoride Applications	$24.00 - 40.00 [5]	40%
Fluoride Tooth Paste	$14.00 - 15.00 [6]	15-30%

1) Based on American Dental Association estimates.
2) Assuming the rinse is administered weekly.
3) Based on retail value of prescription fluoride tablets, $1.50/100.
4) Potential reduction in decay experience dependent upon whether or not the fluoride tablet is taken every day. For best results, the procedure should be started in kindergarten and continued until the eighth grade. School sponsored programs realize a 20 to 30 percent reduction in decay experience.
5) Based on a charge of $12.00 to $20.00 per application administered twice a year in areas not receiving fluoridated water.
6) Assuming 7 ounces of fluoride tooth paste is consumed every 4-5 weeks at approximately $1.30/7 oz. tube.

standpoint of dental manpower and money compared to other approaches.

1.2 Dental Health Education

Public education is necessary to make the public aware of the need for regular professional care and to learn those preventive measures which help deter dental problems. Normally, dental health education programs are directed primarily to school-aged children, although there may be a need for dental education programs for expecting mothers alerting them to the danger of bottle-propping caries.

The content of school based dental education programs should vary with the grade levels of the children. For example, dental education programs for elementary school students in grades one through four typically include information on why the teeth and gums are important, causes of tooth decay (including what foods can be consumed which benefit the teeth), and a demonstration of proper brushing techniques. The proper method of flossing should not be taught until the students are in the fifth and sixth grades because of the physical coordination required to floss properly.

1.3 Dental Screening

A number of programs have been established to perform superficial examinations and classify the mouth with respect to dental care needs. If a person needs dental attention, he/she is referred to a dentist of his/her choice. Normally, no treatment is provided by the program, but follow-up is initiated to assure that each problem identified and referred was attended to. These programs are for the most part offered by some of the local health departments.

1.4 Dental Examinations

The preventive procedures which can be employed in the dentist's office to assure proper dental health maintenance are:

- an examination to identify dental problems in the early stages of development,
- topical fluoride applications to strengthen tooth enamel against decay,
- periodic professional prophylaxis,
- periodic recall and maintenance, and
- home care instructions, such as proper brushing and flossing methods.

2.0 Current Status of Preventive Dental Activities in Montana

2.1 Fluoridation

A number of Montana communities, 77, have naturally fluoridated water supplies. In addition, 15 other communities, including Glasgow Air Force Base, have voluntarily chosen to fluoridate their water supplies. The location of all communities with fluoridated water is shown in Figure 1; Appendix 1 and 2 list these communities and their populations. In all, about 27 percent of Montana's population is drinking fluoridated water; 20 percent naturally fluoridated and seven percent artificially fluoridated. From an examination of Figure 1, one can draw two conclusions. First, most of the fluoridated water supplies are east of the Continental Divide. Otherwise, there appears to be no pattern to the naturally or artificially fluoridated water supplies. Second, it is apparent that most of the larger communities in Montana do not have a fluoridation program.

The limited localized programs which have been conducted in Montana have demonstrated that, for investments of relatively small amounts of money, dramatic improvements can be realized in the general condition of children's teeth. For example, several studies have been conducted in Montana to determine the dental health improvements attributable to fluoridation programs.

TABLE 2

Fluoridation Costs Per Capita Per Year Among Montana Communities Fluoridating Water - 1977.

Community[4]	Date Fluoridation Started	Water Supplies Treated	Approximate Total Gallonage of Water Treated With Fluoride	Approximate lbs. of Fluoride Used/1977	Approximate Dollar Expenditure for Fluoride 1977	Approximate Number People Receiving Fluoridated Water/1977	Dollar Cost of Fluoridation Per Capita 1977 [5]
Bozeman	1953	2	1,955,000,000		5,000.	30,000	.17
Crow Agency	1968	1	112,000,000	800	462.	1,300	.36
Ennis	1972	1	960,000		52.	575	.09
Hardin	1973	1	226,815,000	1,900	1,052.60	3,320	.32
Harlem	1973	1	53,916,000	1,200	1,354.	1,000	1.35
			668,321,000[1]	6,330[1]	981.[1]		.16[1]
Laurel	1958	1	477,500,000[2]	4,523[2]	701.[2]	6,000	.12[2]
Miles City	1955	1	498,000,000	1,812	563.	9,975	.06
Rocky Boy	1972	1	11,000,000	300	168.	300	.56
Roundup	1952	1	160,000,000		700.	2,500	.28
Scobey	1971	1	72,752,000	900[3]	630[3]	1,555	.41
St. Ignatius	1966	1	15,846	200	25.	193	.13
						STATE AVERAGE	.19

1 includes approximately 190,821,000 gallons of fluoridated water -- for industrial use

2 excludes approximately 190,821,000 gallons of fluoridated water -- for industrial use

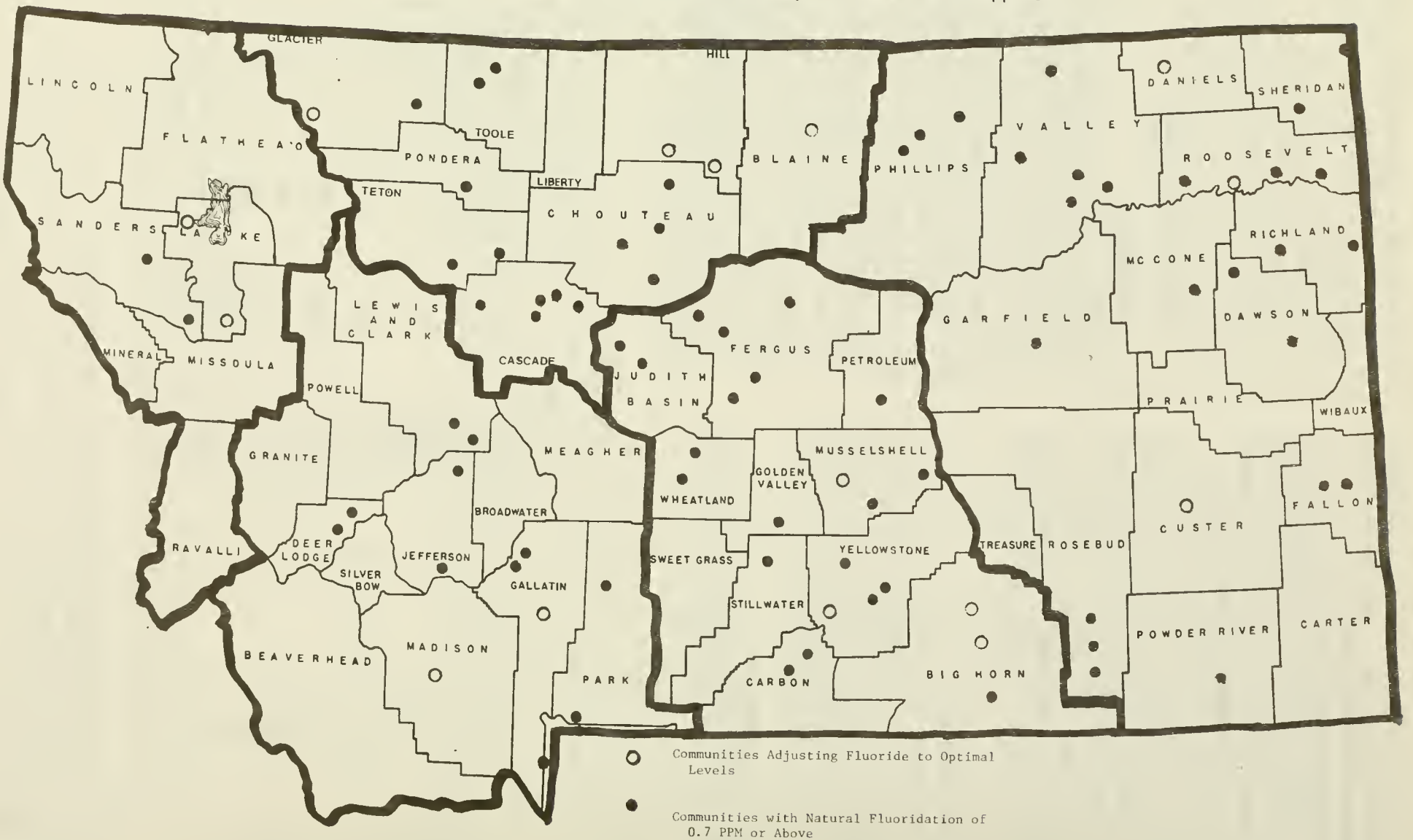
3 projected for a 12-month period based on data available for eight months

4 not included are Poplar, Box Elder, and Elmo

5 dollar cost may be subject to error due to reporting error and occasional fluoridation stoppages

FIGURE 1

Montana Communities with Naturally and Artificially Fluoridated Water Supplies.



The Bozeman Dental Society, along with the respective school authorities and the Dental Division of the State Board of Health, conducted a ten year study in Bozeman from 1953 to 1963. The study demonstrated a 41 percent reduction in decay experience in seven schools, grades one through nine, when compared to fluoride deficient children. Similarly, Roundup conducted a ten year study and found a 60 percent reduction in decay experience. [5]

As an alternative to fluoridating the water supply, the Anaconda school system is participating in a demonstration program designed to evaluate the cost effectiveness of fluoride mouth rinses as a public health strategy. Over 90 percent of the eligible children are participating in the Fluoride Mouth Rinse Program, a total of 1,581 children. Results of the cost benefit study and caries reduction study will not be available until the National Caries Program announces them upon completion of the project in 1979.

Fluoride mouth rinse programs in the school offer the following advantages:

- the procedures have proven effective in reducing tooth decay. (Weekly mouth rinsing with a fluoride can lead to a 20-50 percent reduction in cavities)
- few materials and supplies are required; thus, these programs are inexpensive (The Bureau of Dental Health estimates the cost of the Anaconda Fluoride Mouth Rinse Program at about $.50 per child per year.)
- non-dental personnel with minimal training can easily supervise the procedures, and
- the procedures can be administered easily with minimal interruption of a school's academic program. (Five minutes is required each week.)

For the past two decades, considerable research has been conducted nationally on the use of fluoride tablets in schools. Results show that tooth decay can be reduced by 20 to 35 percent by the daily use of a fluoride tablet in school. Fluoride tablets are prescribed for children up through fourteen years of age, the years during which the permanent teeth are developing. Presently, there are no school-based fluoride tablet programs in Montana.

2.2 Dental Education Programs in Montana

Dental education programs are available through a variety of settings; however, the Bureau of Dental Health, Montana State Department of Health and Environmental Sciences, is probably the leading sponsor of these programs. With a relatively small operating budget, the Bureau of Dental Health has initiated or sponsored several educational programs. Most of these have been aimed at school children. The following paragraphs describe these programs, their impact and their costs.

The School Preventive ("Brush-In") Program provides elementary school children with a new toothbrush, a demonstration on how to use it to control dental disease, and a dental health lecture explaining the cause of dental disease and ways to prevent it. The School Preventive Program enables children to learn how to control their own gum disease and dental caries. Table 3 shows the number of children in Montana schools by subarea and county who participated in the "brush-in" program during the 1976-1977 school year. During this period, approximately 50 percent (56,118 children) of all elementary school children enrolled in public schools in Montana were reached by this program. The operating budget for the School Preventive Program during 1976-1977 was $16,948, $.48 per student per year.

It appears that the subarea in which the most children are receiving the services of the "brush-in" program is the Eastern subarea, with 68 percent of the total elementary school population contacted. Conversely, the subarea in which the percentage of children receiving the services is lowest is the South Central subarea, with only 27 percent of the total elementary school population receiving the benefits. Certain counties warrant special attention since the contact rate is below 50 percent for the "brush-in" program among elementary school children. These counties are Lake, Missoula, Glacier, Hill, Fergus, Wheatland, Yellowstone, Phillips, Roosevelt, Rosebud, and Valley. The school systems in these counties may be targets for increased efforts to get their participation rate higher.

The Cascade City-County Health Department is also sponsoring a pilot program aimed at second and fifth grade school children in Great Falls. Students in the second grade are taught proper brushing techniques and good nutrition, while fifth graders are taught flossing techniques, in addition to brushing and nutrition education. The health department is also sponsoring a "brush-in" program for kindergarteners.

In addition to these programs, many informational materials are available free of charge for dental health education from the Dental Division of the Montana State Board of Health. Some life insurance companies, the National Dairy Council, and dental supply companies offer dental health information materials also. Presently, there are no education programs aimed at educating expectant mothers to the dangers of bottle-propping caries.

2.3 Dental Screening

The Flathead Children's Dental Health Project demonstrates a method of providing comprehensive dental services and preventive services to children in Flathead County, and a way to measure the impact on the dental health of all the elementary school children in the County. The Flathead County Children's Dental Health Project screened and provided preventive services to 4,770 elementary school children during the school year. Initial and recall maintenance dental treatments were completed by 347 children by the dentist of their choice during the same period. Screening results show that approximately 75 percent of the elementary school children in Flathead County need no dental care, compared to 44 percent needing no dental care six years ago when the project began. Projections by the Dental Health Bureau indicate that within 20 years dental disease would be nearly non-existent in Montana if a similar program were funded for all children in the state. The current budget for the Flathead Children's Dental Health Project is approximately $40,000.

The Bureau of Dental Health estimates that it would take 10 hygienists to carry out a statewide screening program in Montana at a cost of $476,000 to $500,000.

A second program has been established in eight counties in Eastern Montana (Richland, McCone, Garfield, Prairie, Dawson, Wibaux, Fallon and Carter). The program was initiated by the Bureau of Dental Health and was administered by the Glendive RHI. It provided screening and dental health education in the schools; no treatment is rendered. The Choteau RHI (Teton County) is planning to offer a similar program.

Several county health departments in Montana also provide dental screening and treatment services. Lewis and Clark County is served through the Children and Youth Program, which offers a dental exam, prophylaxis, restorative care, dental hygiene, nutrition education, and follow-up care. Jefferson, Broadwater, and Powell counties are also served in this program. Cascade City-County Health Department has a program serving low income individuals who are not eligible for Medicaid benefits. The Toole County Health Department offers dental screening programs for elementary school children.

The Advisory Dentist to Long-Term Care Facilities Project was designed to provide screening to all patients in Mon-

tana's long-term care facilities to determine their dental health and oral hygiene needs. The program insured that dental care services and oral hygiene assistance was available to all such patients. Seventy-seven of the seventy-nine long-term care facilities in Montana participated in the program with 78 percent of the long-term care facility patients participating. The Advisory Dentist designed and presented in-service training programs to fit the oral hygiene needs of patients in each facility. Twenty-six (26) percent, or 960 long-term care patients, were referred to their dentists for care. This program is no longer offered through the Dental Health Bureau, since facilities have implemented advisory dentist programs.

3.0 Potential Impact of Alternative Dental Prevention Strategies

3.1 Description

The purpose of this section is to estimate the theoretical costs, potential savings, and possible impacts of selected dental prevention strategies which could be undertaken in Montana. The five strategies are:

- a mandatory program requiring communities of 1,000 people or more to fluoridate their water supplies,
- a voluntary water fluoridation program aimed at the six largest cities in Montana which do not fluoridate their water supplies,
- a fluoride mouth rinse program aimed at all elementary school children in Montana not receiving the benefit of fluoridated water,
- a fluoride tablet program aimed at all elementary school children in Montana not receiving the benefits of fluoridated water, and,
- an expansion of the Dental Health Bureau's "Brush-In" program aimed at all elementary school children in Montana.

The mandatory fluoridation program is based upon a bill considered by the 1971 Montana legislature which did not pass. If this bill would have been enacted, it would have required all incorporated communities of 1,000 or more persons to fluoridate their water supplies.

The voluntary fluoridation program would be arbitrarily aimed at the six largest communities which do not currently have fluoridated water supplies. These communities are Missoula, Butte, Billings, Helena, Kalispell, and Anaconda. Approximately 67 percent of the Helena population is not served by fluoridated water; all five of the other communities are totally unserved. The MHSA's role in this type of program, if such a policy were adopted, would be to support any initiative aimed at fluoridating the community's water supply.

The third strategy involves expanding the Anaconda fluoride mouth rinse program to all the elementary school systems in Montana. Schools offer a logical place of administering self-applied fluorides to children, since they are the group who can realize the greatest benefit from fluoride treatments. The mouth rinse procedure requires only five minutes each week and can be administered by non-dental personnel. The MHSA's role in such a program could range from general support to possible funding when and if area health development funds become available.

3.2 Methodology

The analysis of each fluoride program and its related costs, the potential savings to be realized, and its estimated impact on dental caries is crude and is only intended to provide a basis for comparing each alternative program. Before any policy decisions are made or any strategies implemented a more sophisticated analysis should be undertaken by the community considering the program.

The assumptions used in the analyses are intentionally conservative so that the potential impact and savings may be understated.

The following equations were used in this analysis:

Program Costs

Program Costs = (population) affected x cost/person/year x 6 years.

The population affected includes only those additional persons who would be served by the program. For the mandatory fluoridation program, those persons (27 percent) already on fluoridated water are subtracted.

For the school fluoridation programs, it is assumed that the same proportion of children are currently on fluoridated water and therefore not included in this program.

The unit costs of each program are reported in the previous section. They are:

- water fluoridation - $.19 per person, per year (based on the data shown in Table 2)
- Fluoride Mouth Rinse Program - $.50 per child per year (based upon the experience of the Anaconda Program)
- fluoride tablets - $2.70 per child per school year, (180 days) (based upon the retail cost of $1.50 per 100 tablets and assuming they are taken daily)
- "Brush-In" program - $.48 per child per year (based upon the State Dental Bureau's current experience)

A six-year time frame was adopted because the full impact of any prevention program is not realized immediately, with the exception of a fluoride mouth rinse program. Horowitz, in a nationally accepted article, states that the cost for incremental dental care in Newburgh, New York was 50% lower six years after fluoridation was first initiated. The Bozeman and Roundup fluoridation studies, reported earlier, arbitrarily used a ten year followup to evaluate fluoridation benefits.

Expected Savings

Expected Savings = Population Affected x Average per capita annual cost for dental care x estimated program effectiveness.

The population affected is the same as that used in estimating costs. The average per capita cost, for dental care is assumed to be $28.42, based on 1973 data. [6]

The estimated program effectiveness is reported in the previous section. It is:

- water fluoridation - 50% reduction (based upon the Bozeman and Roundup Experience, and nationally accepted data)
- Fluoride Mouth Rinse Program - 20% reduction (weekly mouth rinsing with a fluoride solution can reduce the number of cavities from 20-50 percent) [7]
- fluoride tablets - 20% reduction (school based programs have demonstrated a 20 to 35 percent reduction in decay experience when children are given a fluoride tablet each day).[8]

It is assumed that no savings will be realized until the sixth year of the program. This is very conservative since some dentists suggest that there are immediate benefits from fluoridation.

Net Savings

Net savings = dental care savings at the end of six years —the six year costs of fluoride

TABLE 3

Elementary School Children Receiving "Brush-In" Program - 1976-1977

County	Total Number Elementary Students Participating [1] 1976-1977 Grades K-8	Total Number Elementary School Children[2] 1976-1977 Grades K-8	Percent Receiving Benefits 1976-1977
Northwestern			
Flathead	4,862	7,163	68
Lake	34	2,809	1
Lincoln[4]	0	2,967	0
Mineral	456	617	74
Missoula	4,386	9,464	46
Ravalli	2,540	3,107	82
Sanders	902	1,307	69
Subtotal	13,180	27,434	48
North Central			
Blaine	731	1,226	60
Cascade[4]	5,961	12,243	49
Chouteau	608	824	74
Glacier	570	2,070	28
Hill	708	2,634	27
Liberty	236	352	67
Pondera	716	1,258	57
Teton	646	913	71
Toole	556	794	70
Subtotal	10,732	22,314	48
Southwestern			
Beaverhead	741	1,150	64
Broadwater	340	433	79
Deer Lodge	1,610	2,127	76
Gallatin	2,914	4,691	62
Granite	273	387	71
Jefferson	771	1,187	65
Lewis and Clark	3,347	6,255	54
Madison	414	684	61
Meagher	214	301	71
Park	1,173	1,685	70
Powell	947	1,099	86
Silver Bow[4]	2,880	6,116	47
Subtotal	15,624	26,115	60
South Central			
Big Horn	1,796	1,796	100
Carbon	759	1,089	70
Fergus	393	1,736	23
Golden Valley	115	142	81
Judith Basin	256	354	72
Musselshell	450	624	72
Petroleum	85	93	91
Stillwater[4]	350	719	49
Sweet Grass	216	408	53
Wheatland	55	339	16
Yellowstone	1,496	14,841	10
Subtotal	5,971	22,141	27
Eastern			
Carter[3]		252	
Custer	1,500	1,615	93
Daniels	324	424	76
Dawson[3]		1,669	
Fallon[3]		679	
Garfield[3]		263	
McCone[3]		428	
Phillips	349	791	44
Powder River	200	373	54
Prairie[3]		228	
Richland[3]		1,578	
Roosevelt	824	1,879	44
Rosebud	689	1,497	46
Sheridan	450	776	58
Treasure	136	163	83
Valley	144	2,065	7
Wibaux[3]		246	
Subtotal	10,186	14,926	68
State Total	55,693	112,930	49

1 Number of students by county who participated in a "brush-in" program during the 1976-1977 school year. Total includes: 1] those programs actually delivered by Bureau of Dental Health; 2] those programs for which the Bureau of Dental Health provided training, supervision, and/or supplies; and, 3] those programs initiated by the Bureau of Dental Health.

2 Summary of Public School Enrollment by Grade and County, 1976-1977, Office of Superintendent of Public Instruction.

3 Rural Health Initiative Service Area (Glendive). "Brush-in" program initiated by Bureau of Dental Health, serving 5,570 children in eight counties.

4 These figures do not reflect several programs currently in existence in Cascade County, Lincoln, Stillwater, Silver Bow Counties.

Percentage of Total Population Affected

% Population affected = population affected by fluoride program + population presently utilizing fluoridated water = total population.

The persons currently on fluoridated water supplies (27%) are included in the estimates although they are not included in the cost and savings estimates.

Net Reduction in Dental Caries in Montana

For water fluoridation programs:

% Reduction in Dental Caries = y (pop. not on fluoride) + 5y (pop. on fluoride) = .865y

The denominator is estimated by assuming that 27 percent of the population currently on fluoride has 50 percent less dental caries. The term "y" denotes the average number of dental caries in a non-fluoridated population. Since it is in both the numerator and the denominator, it is factored out in the calculation.

3.3 Results

Table 4 presents the resultant costs, potential savings and estimated decrease in dental caries for each of the four fluoridation programs if they were implemented for six years, and assuming no benefits would be realized for the first five years. In all cases except the fluoride tablet program, the savings are considerable.

The effectiveness of the school "brush-in" program cannot be evaluated. However, based upon the Dental Health Bureau's program in the past, the total budget to reach all elementary school children in Montana would be $53,653 per year.

TABLE 4

Expected Costs, Savings, and Impact of Four Fluoridation Strategies in Montana Over a Six Year Period.

Program	Target Population	National Cost: Benefit Ratio 1)	Six Year Program Cost	Expected Savings on Dental Care 2)	Net Savings on Dental Care 3)	Percent Population Reached 4)	Potential Reduction in Dental Caries In Montana 5)
Mandatory Water Fluoridation	All Communities of 1,000 People or More	1.65	$287,196	$3,579,869	$3,292,672	63%	21%
Voluntary Water Fluoridation in Six Major Montana Cities	Missoula, Butte, Billings, Helena, Kalispell, Anaconda	1:65	178,445	2,224,306	2,045,861	49%	13%
Fluoride Mouth Rinse	Elementary School Children Not Receiving Fluoridated Water	1:25	244,935	2,784,420[6]	2,539,485	39%	2.7%
Fluoride Tablet	Elementary School Children Not Receiving Fluoridated Water	1:5	1,322,649	464,070	None	39%	2.7%

1) International Workshop on Fluorides and Dental Caries Reductions, School of Dentistry, University of Maryland, 1974, p. 109.
2) The savings on dental care expenditures attributable to the fluoride program, and assuming no savings are realized until the sixth year after the fluoride strategy is implemented.
3) The savings on dental care expenditures resulting from the fluoride program after the cost of the fluoride is subtracted.
4) Represents the total percentage of Montana's population that would be receiving fluoride benefits if a particular fluoride program was implemented. Includes the 27 percent presently on fluoridated water.
5) The percentage reduction in decay experience which can be expected in Montana, including people receiving the fluoride and those not receiving any fluoride. This percentage reflects how the decay experience can be reduced within the entire population of Montana if a fluoridation program is implemented for a target group.
6) The benefits are immediate with fluoride mouth rinses.

REFERENCES

1. Papers on the National Health Guidelines, **Draft Initial Statement,** National Health Policy Planning Guidelines, U. S. Department of Health, Education, and Welfare, Public Health Service, Health Resources Administration, October, 1976, p. 39.
2. Fomon, Samuel J. and Wei, Stephen, **Prevention of Dental Caries.**
3. **Pediatrics,** Vol. 59, No. 5, May, 1977, pp. 777-778, for reprints of Article: Department of Pediatric Dentistry, School of Dentistry, University of Maryland, Baltimore, Maryland 21201.
4. Op cit., Torrell and Ericsson, 1974, as cited in Prevention of Dental Caries, p. 93.
5. Treasure State Health, Division of Dental Health, State Board of Health, October, 1962, April, 1964, as cited in Montana Dental Public Health Manual, August 31, 1966.
6. Distribution of Health Care Expenditures, United States and Washington, 1973, The Guidebook to Personal Health Care In Washington, Health Policy Analysis Program, Dept. of Health Services, University of Washington, August, 1975, p. 30.
7. Preventing Tooth Decay: A Guide To Implementing Self-Applied Fluoride Programs In Schools, U. S. Department of HEW, Public Health Service, National Institute of Health.
8. Ibid, Preventing Tooth Decay.

Appendix 1
Communities Adjusting Their Fluoride to Optimal Levels By Subarea

Community	Population*	Date Fluoridation Started
Eastern		
Miles City	9,023	1955
Poplar	1,389	1970
Scobey	1,485	1971
Glasgow A.F.B.	3,000	1961
Subtotal	14,897	
South Central		
Crow Agency	1,000	1968
Hardin	2,733	1973
Laurel	4,454	1958
Roundup	2,116	1952
Subtotal	10,303	
Southwestern		
Bozeman	18,670	1953
Ennis	501	1972
Subtotal	19,171	
North Central		
Box Elder	170	1972
Browning (not fluoridating at present)	1,700	1968
Harlem	1,094	1973
Rocky Boy	175	1972
Subtotal	1,439	
Northwestern		
Elmo	210	1967
St. Ignatius	925	1966
Subtotal	1,135	
State Total	46,945	

Appendix 2
Communities With Natural Fluoridation
of 0.7 PPM or Above By Subarea

Community	Population
Eastern	
Ashland	531
Baker	2,584
Birney	13
Broadus	799
Brockton	401
Circle	964
Culbertson	821
Dodson	196
Fairview	956
Fort Peck	650
Froid	330
Glasgow	4,700
Glendive, Highland Park	1,100
Hinsdale	390
Jordan	529
Lambert	250
Lame Deer	650
Malta	2,195
Medicine Lake	493
Nashua	313
Opheim	306
Plentywood	381
Plevna	189
Richey	328
Saco	356
Westby	287
Wolf Point	3,095
Subtotal	25,968
South Central	
Ballantine	350
Broadview	120
Coffee Creek	74
Denton	398
Fromberg	364
Geyser	142
Harlowton	1,375
Joliet	412
Judith Gap	160
Lewistown	6,437
Lodge Grass	806
Melstone	227
Moore	219
Musselshell	150
Rapelje	72
Ryegate	261
Stanford	505
Winifred	220
Winnett	271
Worden	425
Subtotal	12,988
Southwestern	
Canyon Ferry	435
Clancy	230
Clyde Park	244
Galen	50
Gardiner	600
Helena (Missouri Supply)	7,573
Three Forks	1,188
Trident	42
Warm Springs	500
West Yellowstone	756
Whitehall	1,035
Subtotal	12,653
North Central	
Belt	656
Big Sandy	827
Black Eagle	2,200
Brady	250
Cascade	714
Fairfield	638
Fort Benton	1,863
Fort Shaw	150
Geraldine	370
Great Falls	60,091
Kevin	250
Loma	110
Malmstrom AFB	15,000
Power	91
Sand Coulee	300
Sunburst	604
Subtotal	84,114
Northwestern	
Dixon	150
Hot Springs	675
Subtotal	825
State Total	**136,548**

Dental Health Bureau, Montana State Department of Health & Environmental Sciences, 1977.

*1970 Census or Estimates

CHAPTER 7
HEALTH STATUS CHARACTERISTICS

The ultimate goal of the Montana Health Systems Agency is to improve the health of the residents being served. The Montana Health Systems Plan is supposed to take a population-based approach to identify health problems and advocate changes in the delivery system to alleviate these problems. One method of doing this is by selecting an indicator of health status, identifying potential target areas and surveying the different types of interventions which might reduce the problem.

Theoretically, by implementing different programs and strategies, the magnitude of the problem (as suggested by the health status indicator) should be reduced. Practically, very few programs actually show a significant and direct reduction in disease. In fact, many studies have implied that the more available the health services, the poorer the population's health status. The exceptions are such preventive measures as immunization and fluoridation programs, where positive impacts have been documented many times.

Many reasons have been suggested for the inability to document payoffs for a given intervention and disease. The primary reason appears to be that it is beyond the current state of the art. First, even authorities are hard pressed to find a universally accepted definition of health. Second, the factors determining one's health status are so subtle and interrelated that altering any one of them does not necessarily show up as a change in the health statistic being examined. Finally, only the crudest of measures of health status (mortality rates) are currently available for analysis. Even these have limited use since age-adjusted statistics are not currently available.

Nevertheless, examining and monitoring selected health status indicators does appear to have some merit. In particular, it appears that such an endeavor could help to identify promising preventive and health education programs. This is especially true when tempered with community values as to what is important.

In this chapter three health problems are addressed, some possible interventions are discussed and programs to be emphasized and encouraged by the Montana Health Systems Agency are identified. The three health problems are:

- Heart Disease
- Cancer
- Alcoholism

The goals and recommendations found in the following components are intended to be statements of the MHSA's future aspirations for types of programs to be fostered. If Area Health Services \Development Funds become available, these goals and recommended actions can serve as a basis for the allocation of these monies. In some cases, they can also be used to guide the review of federal funds.

7.1
HEART DISEASE

GOAL:

Reduce the crude mortality rate from heart disease in Montana by 10 percent (to 260.3) deaths per 100,000 persons by 1985. Primary emphasis is to be placed upon health education, screening, and early intervention activities.

OBJECTIVES:

General Suggestions
Develop systems of primary care through prevention, education and screening programs.

Health Education
Encourage and support intensive programs stressing medical care as only a segment of total health care. This is to be accomplished in part by increasing the use of nurses to work with those at risk.

Exercise
Support the development of programs promoting low cost exercise facilities and information regarding appropriate physical activity.

Nutrition
Promote more intense nutritional programs through public education and encourage public schools to eliminate "junk foods" from their facilities.

Smoking
Advocate increased emphasis on "stop smoking" clinics and anti-smoking programs.

General Screening and Blood Pressure Clinics
Support general screening concepts to identify high risk individuals through annual physical examinations, media education and convenient, visible locations for blood pressure testing. One of the primary groups for these programs should be senior citizens.

CPR Training
Support CPR training of the lay public in school systems, by the Red Cross, Heart Association, and EMS personnel.

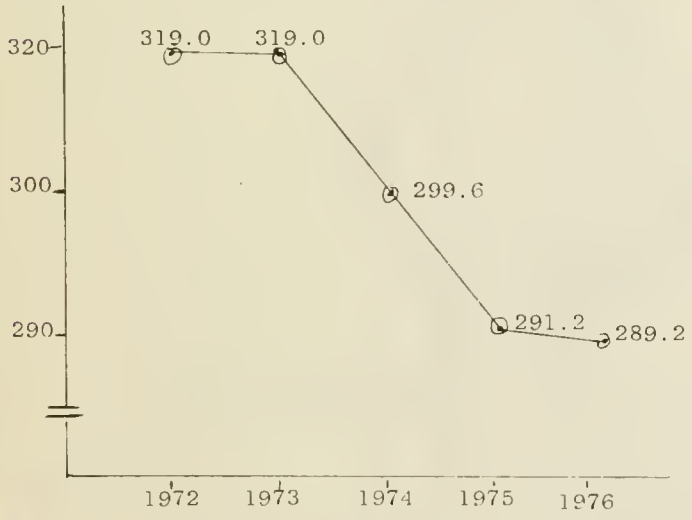


Figure 1
Trend in Heart Disease Mortality in Montana (1972-1976).

SOURCE: Montana Vital Statistics, 1972-1976.

1.0 Health Status Indicators

There were 2,178 deaths in Montana in 1978 caused by diseases of the heart. The prominent cause was ischemic heart disease, accounting for 80.6% of these deaths; the acute form of this cause, myocardial infarction, was responsible for over half of these deaths (54.8%). Both crude and age-adjusted rates of deaths from heart disease appear to be going down (Figure 1), and the same pattern can be observed nationwide. During the period between 1972 and 1976, the crude mortality rate in Montana from heart disease decreased from 319 per 100,000 population to 289.2 - a drop of 9.3 percent. In the age group 35-44, heart disease has dropped to the third leading cause of death, and is now almost half what it was in 1972.

The five-year (1972-1976) crude mortality rates for ischemic heart disease (heart attacks) and other forms of heart disease by county and subarea are shown in Table 1. Quartile maps corresponding to the mortality rates for these two types of heart disease are displayed in Figures 2 and 3. It is suggested that those counties in the highest quartile (i.e.,shaded the darkest) may represent potential target areas for programs aimed at reducing heart disease mortality.

2.0 Primary Prevention Strategies

2.1 Rheumatic Heart Disease

One easily prevented form of heart disease is rheumatic heart disease. If strep-throat infections are left untreated, they can lead to rheumatic fever and, consequently, damage the heart (rheumatic heart disease). Although the state requires all cases of rheumatic fever to be reported, it appears that many go unreported. There were, for example, no cases of rheumatic fever reported in 1976, but 52 deaths were attributed to rheumatic heart disease.

By using penicillin to treat strep-throat and rheumatic fever, over 90 percent of the patients will not develop rheumatic heart disease, making this strategy one of the most cost-effective prevention strategies for heart disease there is. Both the state health department and the Montana Heart Association have penicillin prophylaxis programs for rheumatic fever patients. The state is currently examining its program to see if it should be continued.

2.2 Heart Attack

Six risk factors in middle-aged men without a history of heart attack seem to enhance the chance of dying from coronary heart disease. These are:

- hypercholesterolemia (high serum cholesterol)
- smoking
- hypertension
- lack of vigorous physical activity
- familial or genetic factors
- psychological factors (e.g., Type A personality)

There is considerable disagreement about the relative contribution of these six risk factors. The evidence for elevated cholesterol, smoking and hypertension is, however, almost universally accepted.

Although these characteristics increase the risk of coronary heart disease, they are not causative. That is, some people with these conditions and habits do not have heart disease and others without them get heart disease. However, the chances are higher for developing heart disease if one possesses one or more of these risk factors.

Table 1

Selected Indicators of Heart Disease in Montana.

Subarea and County	Crude Death Rate for Ischemic Heart Disease (1972-1976)	Crude Death Rate for Other Forms of Heart Disease (1972-1976)	Average Number of Deaths from All Forms of Heart Disease (1972-1976)	Percent Population Over 65 (1975)
Northwestern				
Lincoln	140.0	111.2	43.8	7.0
Flathead	154.6	170.1	145.6	10.4
Sanders	191.4	168.8	27.0	13.3
Lake	198.1	193.4	66.4	13.7
Mineral	40.5	138.7	7.6	7.6
Ravalli	192.1	223.9	411.2	15.4
Missoula	111.8	114.3	148.2	7.7
North Central				
Glacier	124.6	126.3	28.8	8.3
Toole	239.9	184.5	24.0	11.0
Pondera	156.2	125.0	20.6	10.6
Teton	186.9	211.8	22.8	12.3
Cascade	92.5	137.6	192.2	8.7
Chouteau	166.7	230.8	26.0	12.1
Hill	139.5	150.7	52.6	8.8
Blaine	80.5	336.2	30.4	11.1
Liberty	225.8	129.0	11.2	8.7
Southwestern				
Beaverhead	134.1	151.2	23.0	10.8
Madison	95.1	130.3	10.0	15.1
Gallatin	96.0	108.3	77.0	8.1
Lewis and Clark	92.6	187.4	105.6	9.8
Broadwater	180.6	194.4	9.8	12.1
Jefferson	94.6	88.8	11.4	8.9
Meagher	100.9	266.1	10.6	11.8
Silver Bow	229.5	186.2	188.4	18.9
Deer Lodge	230.7	141.3	57.6	12.8
Powell	202.2	172.1	29.0	9.3
Granite	149.3	201.5	7.6	12.1
Park	197.4	250.0	54.4	14.2
South Central				
Fergus	125.0	276.2	57.8	15.0
Petroleum	30.3	121.2	1.2	7.0
Judith Basin	111.1	222.2	46.0	15.4
Wheatland	147.5	163.9	8.2	15.4
Golden Valley	127.7	234.0	2.8	15.9
Musselshell	330.2	111.6	20.8	15.4
Sweet Grass	259.7	97.4	11.2	17.7
Stillwater	232.6	127.9	18.6	14.3
Carbon	170.4	243.1	33.8	17.4
Big Horn	115.2	111.5	23.0	7.0
Yellowstone	93.3	134.4	211.3	8.2
Eastern				
Valley	108.2	146.3	34.2	7.9
Daniels	160.3	217.9	13.0	14.8
Sheridan	197.0	200.7	23.4	13.2
Roosevelt	188.0	172.5	39.80	9.8
McCone	175.2	197.1	13.6	10.8
Garfield	93.0	232.6	6.0	9.9
Richland	206.8	128.5	35.2	11.2
Dawson	118.6	149.6	28.0	9.2
Wibaux	150.7	232.9	5.2	12.5
Rosebud	133.9	76.2	16.0	9.4
Treasure	131.1	114.8	3.2	11.3
Powder River	139.1	156.5	6.6	8.2
Custer	202.6	236.6	54.0	12.5
Prairie	193.5	279.6	9.4	15.4
Phillips	177.1	262.0	22.4	13.3
Fallon	137.8	107.1	9.4	10.1
Carter	130.4	282.6	8.0	14.3

SOURCE:
Unpublished data from the Bureau of Records and Statistics and estimates from the Department of Community Affairs.

DEATHS PER 100,000 ESTIMATED POPULATION
SOURCE: BUREAU OF RECORDS AND STATISTICS AND BUREAU OF THE CENSUS.
30.3 - 111.8 LOW QUARTILE
115.2 - 147.5 MEDIUM LOW QUARTILE
148.1 - 192.1 MEDIUM HIGH QUARTILE
193.5 - 330.2 HIGH QUARTILE

FIGURE 2 - Number of Deaths Per 100,000 population in Montana from Ischemic Heart Disease (1973 - 1977)

SOURCE: Unpublished Data from the Bureau of Records & Statistics

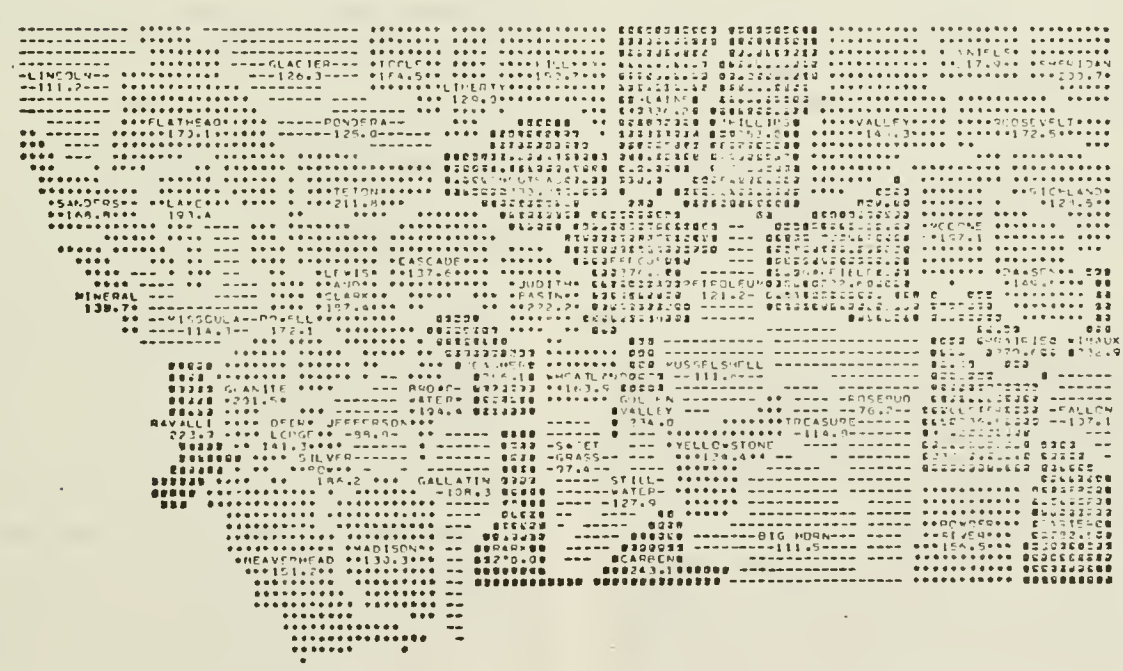

DEATHS PER 100,000 ESTIMATED POPULATION.
SOURCE: BUREAU OF RECORDS AND STATISTICS AND BUREAU OF THE CENSUS.
78.2 - 127.4 LOW QUARTILE
128.5 - 168.6 MEDIUM LOW QUARTILE
170.1 - 222.2 MEDIUM HIGH QUARTILE
223.9 - 336.2 HIGH QUARTILE

FIGURE 3 - Number of Deaths Per 100,000 Population in Montana from Other Kinds of Heart Disease (1973 - 1977)

SOURCE: Unpublished Data from the Bureau of Records & Statistics

One epidemiological study estimated that one-third of 25-year-old males and one-half of 45-year-old males who have high cholesterol levels, smoke and have high blood pressure will develop coronary heart disease in 20 years. On the other hand, another study concluded that a community-wide intervention program aimed at modifying these three risk factors could expect to reduce the overall incidence of coronary artery disease by no more than 10 percent with 50 percent participation. There is no evidence that programs aimed at the other risk factors in the general population would have any impact on the incidence or prevalence of coronary artery disease.

At the same time, the Inter-Society Commission for Heart Disease Resources has made some estimates of the maximum potential reduction in heart disease mortality to be realized if some given goal levels were to be achieved. These estimates are shown in Table 2.

Change	Target Population	Maximum % Reduction in CHD Mortality
10% reduction in serum cholesterol	U.S. population	24
Cessation of smoking in 30%	U.S. middle-aged white males who smoke	10
Bring blood pressure under control in 50%	U.S. middle-aged white, hypertensive males	7

Table 2

Potential Impact on Heart Disease Mortality of Three Primary Prevention Intervention Strategies.

SOURCE:
Inter-Society Commission for Heart Disease Resources.

Each of these strategies is particularly amenable to health education programs. However, in the past, such programs have had poor compliance ratings. Each of these efforts involves behavior changes which must be followed over a lifetime. Thus, there is a serious question that the changes listed in Table 2 are attainable through educational efforts.

2.2.1 Nutritional Programs

In Montana, there apparently has been no general public program aimed at high fat diets. The Preventive Health Bureau, in the Department of Health and Environmental Sciences, has held nutritional conferences in which this subject has been addressed. These conferences are held on a request-only basis.

2.2.2 Anti-Smoking Programs

The state of Montana levies a $.12/pack tax on cigarettes. Estimates of the amount of revenue generated and the number of cartons for the last four years are presented in Table 3. If one assumes that an average adult smoker smokes two packs a day, there would be approximately 265,252 smokers in Montana, or about 53 percent of the resident population over 18 years of age.

Fiscal Year	Estimated Number of Cartons Sold	Total Tax Revenue Generated
1975	9,090,402	$10,581,247
1976	9,336,473	$10,867,684
1977	9,565,980	$11,134,814
1978	9,681,706	$11,269,506

Table 3

Estimated Number of Cigarette Cartons Sold in Montana and Tax Revenue Generated (1975-1978).

SOURCE: Unpublished Data from the Miscellaneous Tax Division, Dept. of Revenue, State of Montana.

Anti-smoking education efforts are currently being undertaken in Montana by the Montana Division, American Cancer Society, the Montana Lung Association, and the Montana Heart Association.

Seventh Day Adventist Churches appear to be the most active group in sponsoring "Stop Smoking" Clinics.

Figure 4 shows the cities in which stop smoking programs were held between January and May, 1978. In addition, the local television station in Missoula put on an anti-smoking program on five consecutive Fridays in cooperation with the local Seventh Day Adventist pastor.

The number of participants varies in relation to the size of the community in which the program is held. It has been estimated that the following communities have these average participating rates:

Missoula	200 - 500 participants
Helena	35 - 50 participants
Bridger, Custer, Ovando	20 - 30 participants

Using this estimate, it appears that between 1,200 and 2,700 people participated in these anti-smoking programs between January and May, 1978.

The Montana Lung Association is also considering sponsoring a pilot "Stop Smoking" Clinic in Helena.

3.0 Possible Screening Strategies

One is a health education program aimed at the public to teach them to recognize the early warning signs of a heart attack. These symptoms are:

- Uncomfortable pressure, fullness, squeezing, or pain in the center of the chest for more than two minutes.
- Pain spreading to the shoulders, neck or arms.
- Severe pain, dizziness, fainting, nausea, or shortness of breath also occurring.

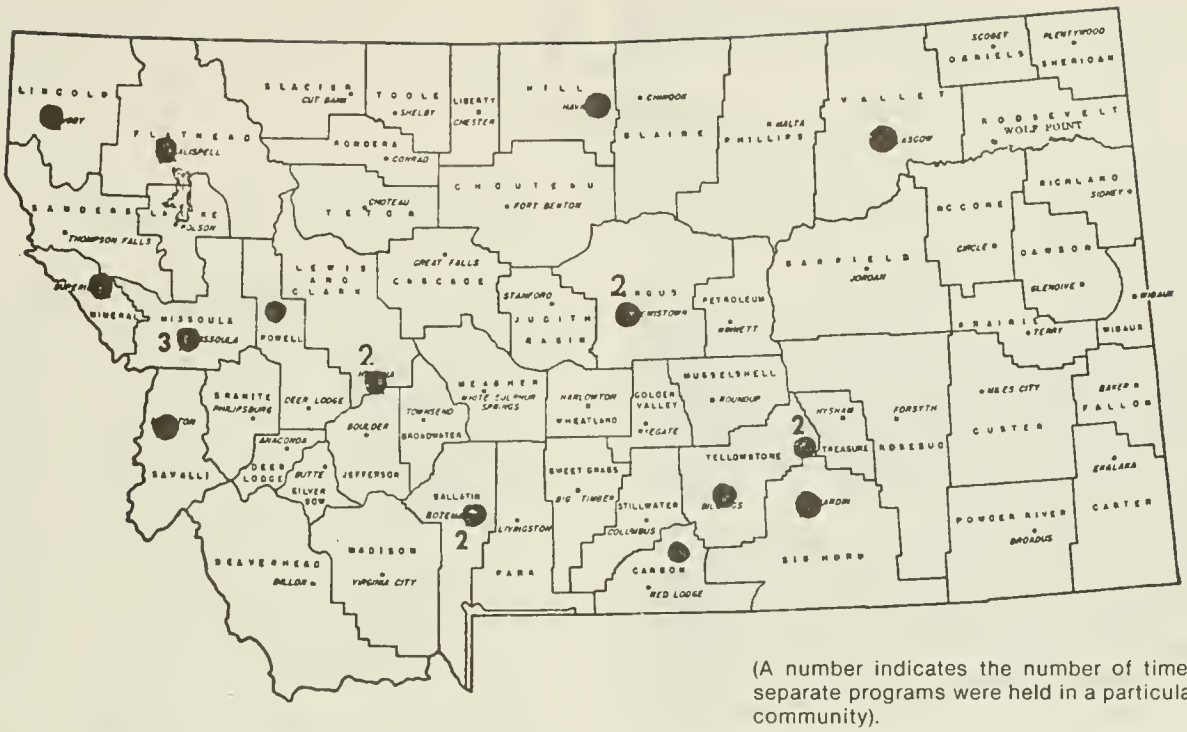
It has been estimated that seven percent of the deaths from heart attacks could be prevented if victims knew the early warning signs and received care within two hours.

It has also been suggested in the literature that screening programs to identify children and adults with high cholesterol levels be started. It is felt, however, that this strategy is not cost effective and cannot be adopted as a general public health measure. The same appears to be true for mass screening with electrocardiograms (ECGs).

4.0 Early Intervention After the Attack

Emergency Medical Services (EMS) are found in many communities and respond to many types of emergencies, including heart attacks. EMS systems are clearly beneficial, cost effective, and life saving.

The Inter-Society Commission for Heart Disease Resources has suggested that improvement of the present ambulance system in the United States to meet the standards of an all-purpose ambulance is likely to be the most practical approach in the future for most communities.



(A number indicates the number of times separate programs were held in a particular community).

Figure 4

Location of "Stop Smoking" Clinics Sponsored by the Seventh Day Adventist Church (January - May, 1978).

SOURCE: Personal communication with representatives of the Seventh Day Adventist Church.

The following principles for emergency transportation operation were recommended by the Inter-Society Commission:

(1) The primary effort in emergency care should be early stabilization of the patient.

(2) The transport system should be operated with the full knowledge and cooperation of community physicians.

(3) The community should be fully aware of the purpose and function of the system, and this information should be included in public and professional education programs in heart disease.

(4) The method by which patients and physicians activate the emergency transport system should be simple, effective, and tailored to meet local circumstances.

(5) The emergency transport system should encompass civic emergency programs operated by the police, fire department, or rescue squads in the community.

(6) Transportation should be coordinated with the facility which will receive the patient.

(7) A program for ambulance personnel to develop and maintain a high level of skill in the management of cardiac emergencies should be an integral part of the system.

In addition, it has been suggested that two special programs might be developed in certain communities to reduce the response time after a heart attack has occurred.

First, mobile coronary care units designed to respond only to suspected cardiac emergencies might be established. To be effective, this strategy appears to be limited to areas with large population concentrations. Studies have shown that special ambulance systems and mobile coronary care units have succeeded in resuscitating between 12 and 65 percent of the heart attack victims who were found in ventricular fibrillation, but one-half of these will be dead within two years.

The second potential program to reduce the response time to treat heart attack victims involves training the general public in cardio-pulmonary resuscitation (CPR).

Preliminary data from King County, Washington (Seattle), indicates that the benefits of bystander-initiated CPR are shown to have similar ratios of resuscitation and survival as those being resuscitated by paramedics in an advanced life support service. It is emphasized, however, that for CPR training to be effective, the necessary backup support (Emergency Medical Systems) systems and hospital (Coronary Care Units) must be in place.

Two communities, Billings and Missoula, have had full time staff to give CPR training. The other communities have relied upon volunteer instructors. The state EMS Bureau is encouraging CPR training by giving continuing education and recertification credits to EMT instructors in CPR.

5.0 Inpatient Services

Two concepts of inpatient care have been developed in recent years to improve the outcome of coronary heart disease patients. These are the development of coronary care units (CCUs) in most hospitals and the use of open-heart surgery. Both of these are addressed in service components of the plan.

Remote monitoring systems for CCUs have been developed in other states, but none has been established in Montana, although electrocardiograms are transmitted and read in selected areas by remote consultants.

The Montana Health Systems Plan calls for the development of three cardiac catheterization laboratories and open-heart surgery teams in Montana. Four facilities have developed catheterization laboratories (Missoula, Billings (2) and Great Falls) and two currently have open-heart surgery capability (Missoula and Billings).

6.0 Rehabilitation and Follow-up

Many efforts have been made, primarily by the medical profession, to alter the behavior of those who have had a heart attack. These efforts concentrate primarily on getting heart attack victims to reduce serum cholesterol levels, stop smoking, control hypertension and increase their level of physical activities. It has been suggested that these late interventions have contributed significantly to reduction of heart disease mortality rates.

It has been estimated that if all smokers who suffered an attack stopped smoking, then a 15 percent reduction in coronary deaths might be possible. If hypertension were controlled in all those already having had a heart attack, a maximum reduction of six percent in the mortality rate might be achieved. The potential impact of altering the diets and increasing the physical activity of heart attack survivors is less clear.

7.2
CANCER

GOAL:

Reduce the mortality rate in Montana from cancer by 10 percent.

RECOMMENDED ACTIONS

1. Promote treatment within the state of Montana to eliminate out-of-state travel, easing treatment costs.
2. Support plans to involve civic organizations in cancer education programs.
3. Advocate the development of informational systems to make cancer support services more accessible.
4. Advocate yearly pap smears for women 18 and over for earlier diagnosis of uterine cancer.
5. Through the American Cancer Society, encourage more women to engage in breast self-examination.
6. Through civic and charity organizations, encourage more participation in "Stop Smoking" Clinics.

1.0 Health Status Indicators

Cancer encompasses a large number of diseases characterized by the uncontrolled growth and spread of abnormal cells. In most cases, these cells build up into tumors which in turn compress, invade, and destroy normal tissues. The American Cancer Society estimates that of every six people who get cancer, two will be saved and four will die. Of the four who will die, one might have been saved had earlier diagnosis and treatment been implemented. The chance that an individual under 20 years of age will develop cancer during some point in his or her life is approximately 25 percent. [1]

The economic cost of cancer in the United States is estimated to exceed $15 billion annually. The greatest financial burden for cancer care involves hospitalization. Based on data from an American Cancer Society conference in 1972, a typical hospital stay for a cancer patient averaged 16 days and cost about $1,500. Direct costs alone for cancer care, such as hospital, nursing home care, physician fees, nurse services, drugs and other treatment amount to $3 billion annually. [2]

This component will focus on six of the most common types of cancer in Montana. They are:

— Lung Cancer
— Colon Cancer
— Breast Cancer
— Uterine Cancer
— Prostate Cancer
— Skin Cancer

The first five of these are leading causes of cancer mortality in Montana. The sixth, skin cancer, is not normally a death-threatening disease, but appears to have a high incidence in the state.

Unfortunately, Montana has no functioning tumor registry from which local estimates of the incidences of the types of cancers can be made. Consequently, estimates of the number of new cases of cancer annually found in Montana are based on estimates from the 1971 National Cancer Survey. These estimates are shown in Table 1.

Although the mortality rate for Montana is somewhat less than the national average, cancer is the second leading cause of death in Montana, accounting for nearly 1,200 deaths in 1976. It is primarily a disease of middle-aged and elderly individuals. In Montana, the median age of patients at diagnosis for the five types of cancer being considered here is:

— Lung	63.7 years
— Colon	69.1 years
— Breast	67.5 years
— Cervical	38.0 years
— Prostate	73.9 years

To compare the magnitude of the cancer problem between counties, age-adjusted mortality rates for the period between 1950 and 1969 are used. Based on this data, from which these figures were made, it appears that cancer of the lung is a major problem in Silver Bow County, and cancer of the prostate is a problem in Lewis and Clark County. The mortality rates for both of these diseases in these two counties are in the upper 10 percent of the nation and are significantly higher than the national average. Other counties have mortality rates that are in the upper 10 percent of the nation, but their rates are not significantly higher than the national average for the period.

2.0 Primary Prevention Strategies

In Montana, the greatest opportunity for saving lives through prevention or early diagnosis and treatment are programs targeted to the at-risk populations and directed to the site categories accounting for the greatest mortality. Based on epidemiological studies, certain risk factors have been identified which increase the likelihood of falling victim to some type of cancer. These risk factors currently include age, sex, race, occupation, family history, and personal habits. The populations at risk for the major cancer sites are discussed below. These groups may serve as potential target populations for cancer education programs.

	Breast	Colon-Rectum	Lung	Uterus (invasive)	Prostate
Estimated new cases	250	300	300	150	200
Estimated deaths	100	175	275	30	75

Table 1

Estimated New Cancer Cases and Deaths in Montana for 1978, by Site Category.

SOURCE: 1978 **Cancer Facts and Figures**, American Cancer Society.

- At least 80 percent of **lung cancer** is caused by cigarette smoking. Risk increases if a close relative has had lung cancer. There is also a substantial increase in the risk of developing cancer in the larynx, oral cavity, and bladder among cigarette smokers. For women, the majority of lung cancers occur among those 55 to 64 years of age. Women who have smoked one or more packs of cigarettes a day for at least 20 years, and who began smoking before the age of 20, are five times more apt to die from lung cancer than women who have never smoked. Similarly, men who have smoked at least two packs of cigarettes per day for 20 years and who started smoking before age 15, are 15 to 20 times more apt to die from lung cancer than men who have never smoked. Most lung cancers among men occur in the 60 to 69 year old age group.
- **Cancer of the colon and rectum** and its possible relationship to present day dietary practices is currently being studied, especially the role of highly processed foods in relation to slower transit time and increased exposure of the intestinal tract to the carcinogens.
- **Breast cancer** occurs mainly in women over 35 years of age, with the risk of developing breast cancer increasing with age. Breast cancer is more prevalent among women who have never had a child or who bore the first child after the age of 25 years. Risk also increases among women whose mothers or sisters have had breast cancer or women who experienced early menarche and/or late menopause. Finally, cancer in one breast increases the risk for the other breast.
- **Cancer of the prostate gland** is rare among men under 50 years of age. This cancer does have a familial tendency in that it generally occurs among family members with greater frequency than in non-family members.
- **Cancer of the uterus** (cervical) occurs most often in women 45 to 69 years of age. Social factors play a significant role with this type of cancer, such as low income background, past history of sexual intercourse with multiple partners, early age of first intercourse, and lack of regular physical checkups or Pap tests.
- The risk of developing **skin cancer** is highest for those engaged in farming and other outdoor occupations exposing the individual to frequent sun contact. This cancer has also been linked to persons with frequent contact with coal, tar, pitch or creosote.

By definition, primary prevention indicates eliminating exposure (or increasing resistance) to prevent the disease from getting started. Of the variety of factors found associated with cancer, tobacco smoking is the most amenable to influence, and the most clearly indicated as a carcinogen. A discussion of the estimated number of cigarette smokers in Montana and current activities in this area is presented in the Heart Disease Component and will not be repeated here.

Occupational exposure can also be controlled, once identified. The number of cases involved with each cancer causing agent, however, is generally small and limited to (often intense) occupational exposure. Nevertheless, the establishment of employee health surveillance programs would help detect possible health hazards indicating cancer.

An additional preventive strategy emerging today is the role of nutrition in cancer prevention. A Senate subcommittee on nutrition estimates that 40 percent of the cancers in men and 60 percent of the cancers in women are nutritionally related.[1] However, many authorities feel that the role of nutrition in the induction of cancers is highly speculative and unconfirmed, in spite of the political attention being paid to it.

Finally, although cancer occurs mainly in adults, proper health habits and familiarity with cancer should begin early in life. The American Cancer Society has developed a program directed to children in kindergarten and on up to the third grade entitled "Early Start To Good Health." Most educational programs, which are offered free of charge by the American Cancer Society, involve three components; a film, a medical or lay speaker, and a discussion session designed to involve participants and help promote positive health habits.

In summary, anti-smoking programs and **selected, specific** occupational hazard prevention programs are the only primary prevention strategies available. The effectiveness and efficiency of general, untargeted, and non-specific health education remains unproven, as contrasted to directed health education (stop-smoking clinics) or public information (increased awareness).

3.0 Possible Screening Strategies

The objective of a cancer screening program is to detect cancer before it has spread, so that it can be treated promptly by surgery, radiation, chemotherapy, or a combination of these methods. Most cancer detection techniques are too expensive to use in a mass screening program for the general public.

Screening programs for cancers have had demonstrable impact only for two sites — cervical cancer ("Pap Smear") and breast cancer in women (breast self-examination).

Uterine cancer could be substantially reduced as a cause of death if every adult woman had a Pap test with her regular health checkup, and if every woman over 35 years old would report any abnormal bleeding to her physician. The Pap test is also an effective method to detect cervical cancer. This procedure allows for diagnosis before any symptoms appear, thus enabling treatment to be almost 100 percent successful. The American Cancer Society recommends a pelvic examination as well as a Pap smear for women at menopause for the detection of endometrial cancer.

Breast self-examination can aid in the detection of breast cancer during the early stage of development. More than 90 percent of all breast cancers are discovered by the women themselves. However, a 1972 survey sponsored by the American Cancer Society concluded that 75 percent of the adult female population have done breast self-examination at least once, but only 24 percent were doing it on a monthly basis.

Recently, the American Cancer Society and the National Cancer Institute jointly funded 25 Breast Cancer Detection Demonstration Projects across the nation in order to demonstrate the value of xeromammography and thermography (recording heat patterns of the breast) in finding early breast cancers.

This, however, was not shown to be cost effective for a mass screening effort of the general public. In addition, questions were raised about the risks of inducing cancer from radiation exposure. Consequently, the American Cancer Society is suggesting that mammograms be routinely done on women under 50 only when they have had a previous history of breast cancer; have had a family history (i.e., mother and/or sisters) of breast cancer, or when breast cancer is suspected. At the same time, this question has stimulated research into developing low-dose mammography units.

Screening for colorectal cancer by tests for occult blood in the stool is currently a major project of the American Cancer Society. There is insufficient data to determine, at this time, the effectiveness or efficiency of such screening.

A 1977 Gallup survey has indicated that about 58 percent of the people over 40 would be willing to self-administer the occult blood test if they were shown how. About 800 people from three counties in Montana (Lincoln, Garfield and

Ravalli) recently participated in a pilot program investigating the applicability of this test to mass screening.

The most efficient strategy for screening for cancer (and other diseases) still is the doctor's office. Even though the "routine physical exam" or "check-up" has a low yield, many tests and evaluations can be performed in one place usually during one visit.

4.0 Intervention and Medical Management

Cancer treatment today consists of combined therapies, including surgery, radiation therapy and chemotherapy. Modern surgery yields better results with less radical operations than in the past; radiation therapy has fewer side effects and chemotherapy attacks some advanced cancers and prevents tumors from recurring in many cases.

The therapy of cancer is necessarily multi-disciplinary — surgery, radiotherapy, chemotherapy, rehabilitation, and combinations of these therapies. Stronger emphasis needs to be placed on inter-center cooperation, on referral patterns from primary physicians to Montana centers, to out-of-state specialty centers and back.

Proposed Cancer Programs in Montana, built around radiation therapy units, are addressed in Chapter 3 of this plan (Section 3.2).

5.0 Rehabilitation

Patient support services are frequently available through local programs, as well as through other programs associated with the Montana Division, American Cancer Society. The counseling and support from other patients who have undergone a similar surgery or experience (mastectomy, laryngectomy, ostomy) is well utilized in many communities.

The basic service program offered by the American Cancer Society (ACS) includes: 1) information and counseling services not only on ACS services, but also on community health services and other resources available to the cancer patient and his or her family; 2) equipment loans, such as wheelchairs and sick room supplies; 3) surgical dressings prepared by volunteers; and 4) transportation to and from the doctor's office, clinic, or hospital for treatment.

In addition, the American Cancer Society sponsors the Reach to Recovery Program. This program uses former mastectomy patients as volunteers to counsel, teach, and assist patients having a recent mastectomy. Currently-trained Reach to Recovery Volunteers are located in Ravalli, Missoula, Flathead, Lewis and Clark, Silver Bow, Cascade, Fergus, Yellowstone, Gallatin, Custer, Dawson, Roosevelt, and Hill Counties.

Finally, many patients participate in specialized self-help groups. For example, ostomy clubs are presently located in Billings, Butte, Missoula and Great Falls.

6.0 Care for the Terminally Ill

Since 1970 a movement has been growing to provide the dying patient and his family with special services. These include comfortable surroundings, contact with family and friends, freedom from pain and reasonable health care costs. Such services are embodied in the "hospice" concept.

A hospice is defined as a medically directed, nurse coordinated program providing a continuum of home and inpatient care for the terminally ill patient and his family. Services provided can be categorized into two groups. The first is **palliative care**, the medical relief of pain and easing of symptoms without using artificial means to prolong life. The second is **support care**, help for the terminally ill and his family to adjust to death. Individual services may range from the most highly skilled medical care to homemaker services.

The West-Mont Home Health Program (Helena) is the first agency in Montana to develop a hospice program. This was started in 1979. Most of the care is home-based and is highly dependent upon friends, neighbors and volunteers. The West-Mont program has no inpatient capability.

REFERENCES

1. 1976 Cancer Facts and Figures, American Cancer Society, p. 3.
2. Ibid, p. 31.
3. Cancer Research Faces 'Crisis of Credibility,' Missoulian, Tuesday, June 13, 1978, p. 2.
4. 1978 Cancer Facts and Figures, American Cancer Society, p. 16.
5. Ibid, p. 16.
6. Ibid, p. 17.
7. Ibid, p. 23.

7.3
ALCOHOLISM

GOAL:

Reduce the incidence and prevalence of alcoholism in Montana and reduce the number of deaths due to alcohol related causes by 10 percent.

RECOMMENDED ACTIONS:

Organization of Services
Support the continued emphasis toward developing a coordinated network of services, programs and counselors to increase effectiveness and efficiency of treatment.

Public Education
Stress early intervention for appropriate screening and treatment, especially with youth.

Utilize the media for referrals to community support organizations with proven success rates.

Prevention and Detection
Support the prevention strategies of the Alcohol and Drug Abuse Division of the State of Montana.

Reimbursement
Continue to encourage third-party payors to provide coverage for alcohol treatment and rehabilitation.

Encourage local authorities to use alcohol tax monies for alcohol programs.

1.0 Health Status Indicators

There are no precise estimates of the number of alcoholics in Montana. The Alcohol and Drug Abuse Division, within the Department of Institutions, estimates that 8.5 percent of the general population and 70 percent of the Indian population are alcohol abusers. The number of alcohol-related accidents and the per capita consumption rate of alcoholic beverages are increasing.

In this report two proxy indicators of alcohol abuse are used to show differences among the counties within Montana. They are: 1) the five-year crude death rates from cirrhosis of the liver, and 2) the five-year death rates from motor vehicle accidents.

Alcoholic cirrhosis of the liver in Montana was ranked the number ten cause of death in 1976. Previously, it had not been in the top ten. In 1976, 119 individuals were reported to have died from cirrhosis of the liver, 79 males and 40 females.

During 1976, approximately 56 percent of the drivers and 26 percent of the passengers killed in motor vehicle accidents had been drinking (.05 percent or more blood alcohol).

Table 1 shows these two rates by subarea and county for the period between 1972 and 1976. The statistics are of limited value since they are not age adjusted. Figures 2 and 3 present quartile maps indicating those counties which have had the highest death rates for cirrhosis of the liver and motor vehicle accidents, respectively.

The Alcohol and Drug Abuse Division, which administers alcohol programs in Montana, has identified five groups for which special programs are to be developed. These are:

— Native Americans
— Women
— Youth
— Rural Populations
— Elderly

During the period September, 1977 to February, 1978, 25 percent of the admissions to alcohol treatment programs were Native Americans; about 20 percent were women, and 8 percent were under 20 years of age. Seventeen (17) percent of the clients admitted to DWI Court Schools were under 20. Statistics indicate that alcoholism, coupled with misuse of prescription drugs, is by far the greatest drug problem among Montana's elderly.

Rural populations are a primary target because planning, needs assessment, and program implementation in such areas are more time-consuming and expensive.

2.0 Prevention Strategies

The prevention programs undertaken in Montana appear to be primarily focused at youth. The Alcohol and Drug Abuse Division (ADAD) has set up a Statewide Youth Task Force to recommend possible programs. Recommendations, to date, have suggested developing alternative programs for youths(such as youth centers), developing employment opportunities, and making up-to-date materials available to youth and persons working with youth.

ADAD, in coordination with the Office of Public Instruction, has also developed curricula for schools (grades kindergarten through 12) which deal with alcohol and drug abuse. ADAD is hoping to obtain a legislative mandate to ensure that alcohol and drug education courses will eventually be delivered in all schools.

The Department of Health and Environmental Sciences also maintains an alcohol and drug abuse education film library under contract from ADAD. These films are available to any individual or group in Montana for the cost of mailing. They are frequently used by schools and civic groups.

ADAD has recently been given a grant from the National Institute for Alcoholism and Alcohol Abuse to set up a prevention task force.

The Alcohol Prevention Trust is active in media campaigns, public education, and sponsoring essay contests.

3.0 Screening and Early Intervention Strategies

At the present time, self-diagnosis or family awareness appear to be the first steps in delivering alcohol services to the abuser. Of the persons admitted to alcohol programs between September, 1977 and February, 1978, 29 percent were self-referral and 8 percent were referrals by the patient's immediate family. Court referrals constituted another large block of people coming in for treatment, accounting for 13 percent of all the admissions.

Another prevention and early intervention program sponsored by the Highway Traffic Safety Bureau, Department of Community Affairs and the Highway Patrol Bureau, Department of Justice, is the DWI Court Schools. Many persons convicted of driving under the influence of alcohol are required by the court to attend a course of six sessions - two hours apiece - dealing with alcohol education. Most of the state approved, off-reservation alcohol programs serve as the schools. A fee of $50 is charged, and usually the court assesses this as part of the fine.

It has been estimated that about 25 percent of those attending the school are referred to an alcohol treatment program; however, not all participate.

Table 1

Five Year Crude Mortality Rates in Montana from Cirrhosis of the Liver and Motor Vehicle Accidents (1972-1976).

Subarea and County	Crude Death Rate for Cirrhosis of the Liver (1972-1976)	Crude Death Rate for Motor Vehicle Accidents (1972-1976)
Northwestern		
Lincoln	1.2	35.3
Flathead	9.8	35.9
Sanders	18.0	79.9
Lake	10.9	81.2
Mineral	5.8	29.2
Ravalli	1.1	50.0
Missoula	6.9	32.4
North Central		
Glacier	42.7	96.1
Toole	18.2	61.8
Pondera	11.4	48.4
Teton	15.6	24.9
Cascade	13.1	29.9
Chouteau	6.4	48.2
Hill	12.3	34.8
Blaine	5.8	72.3
Liberty	16.3	56.9
Southwestern		
Beaverhead	22.0	56.1
Madison	7.2	53.8
Gallatin	6.6	27.3
Lewis and Clark	14.9	34.2
Broadwater	7.2	64.7
Jefferson	20.6	32.4
Meagher	18.3	91.7
Silver Bow	27.0	45.4
Deer Lodge	17.0	35.2
Powell	14.0	41.9
Granite	15.0	45.1
Park	11.6	48.3
South Central		
Fergus	1.6	34.3
Petroleum	30.3	90.9
Judith Basin	0.0	45.1
Wheatland	24.8	33.1
Golden Valley	0.0	85.1
Musselshell	4.8	67.3
Sweet Grass	19.4	45.2
Stillwater	0.0	39.2
Carbon	12.8	35.7
Big Horn	35.9	87.0
Yellowstone	13.2	33.0
Eastern		
Valley	16.9	35.4
Daniels	12.9	51.6
Sheridan	18.1	50.7
Roosevelt	42.6	89.1
McCone	14.7	66.2
Garfield	0.0	47.1
Richland	10.1	44.5
Dawson	5.5	38.6
Wibaux	0.0	70.4
Rosebud	43.5	79.3
Treasure	0.0	66.7
Powder River	0.0	68.4
Custer	11.6	46.3
Prairie	10.9	43.5
Phillips	11.1	40.7
Fallon	10.3	41.0
Carter	0.0	10.8

SOURCE:
Unpublished data from the Bureau of Records and Statistics.

4.0 Treatment Programs

ADAD is currently implementing a regional, community-based concept for delivering alcohol treatment services with satellite counselors providing services to outlying areas. Figure 3 shows the location of these programs. Utilization statistics and general goals have already been addressed in the Alcohol Services Component.

To strengthen the programs and to develop a better financial basis for them, ADAD is working to maximize third-party payments for alcohol treatment. One strategy is to amend the Insurance Code, through legislative action, to require alcohol service coverage. A second strategy is to approve programs (annually) in accordance with the state law and to certify alcohol counselors. At the present time, ADAD is also encouraging the various programs to become accredited by Joint Commission on the Accreditation of Hospitals. The certification program for professionals is now operating on a voluntary basis. ADAD is suggesting that the legislature make it a mandatory program for all counselors in state programs. It is felt that these two certification programs will reduce the third-party payor resistance toward reimbursement for alcohol and drug services.

5.0 Rehabilitation and Aftercare

In order to be approved by ADAD, rehabilitation and aftercare must have the followup services. Most aftercare services, however, appear to be provided by local Alcoholics Anonymous (AA) and associated programs (Alanon, Alateen). These programs are found in many communities throughout the state.

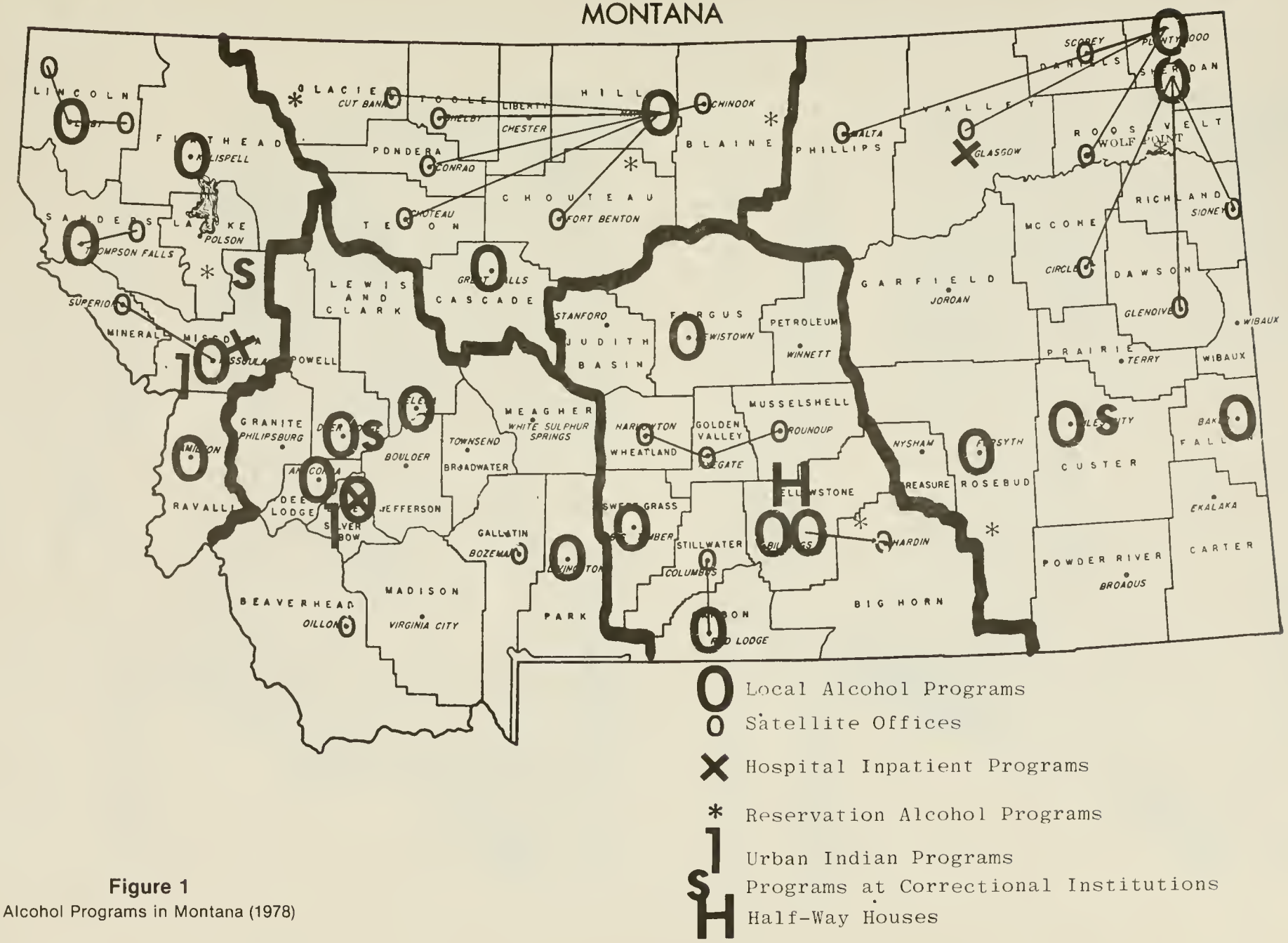


Figure 1
Alcohol Programs in Montana (1978)

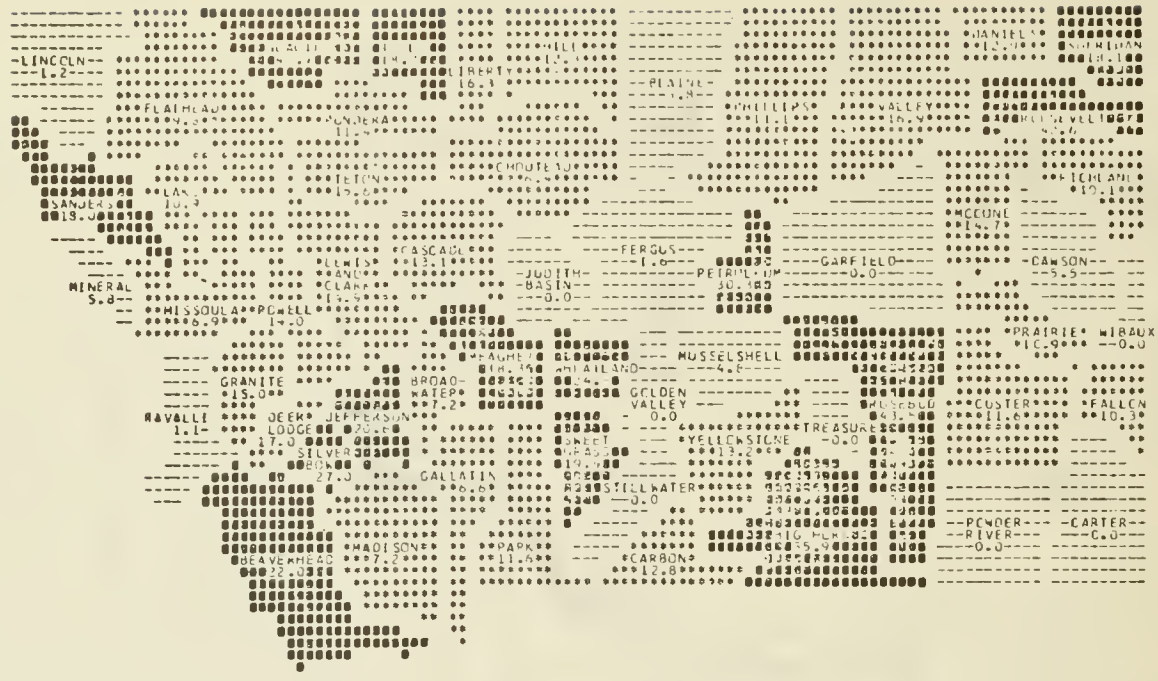

DEATHS PER 100,000 ESTIMATED POPULATION.
EIGHTH REVISION ICDA RUBRIC 571.
SOURCE: BUREAU OF RECORDS AND STATISTICS
AND BUREAU OF THE CENSUS.
0.0 - 5.8 LOW QUARTILE
6.4 - 11.6 MEDIUM LOW QUARTILE
12.3 - 17.0 MEDIUM HIGH QUARTILE
18.0 - 43.5 HIGH QUARTILE

Figure 2

Five Year Death Rates for Cirrhosis of the Liver: Montana Counties, 1972-1976 (by place of residence).

DEATHS PER 100,000 ESTIMATED POPULATION.
EIGHTH REVISION ICDA RUBRICS 810-823.
SOURCE: BUREAU OF RECORDS AND STATISTICS
AND BUREAU OF THE CENSUS.
10.8 - 35.3 LOW QUARTILE
35.4 - 45.4 MEDIUM LOW QUARTILE
46.3 - 66.2 MEDIUM HIGH QUARTILE
66.7 - 96.1 HIGH QUARTILE

Figure 3

Five Year Death Rates for Motor Vehicle Accidents: Montana Counties, 1972-1976 (by place of residence).

SOURCE: Unpublished Data from the Bureau of Records and Statistics.

VIII APPENDICES

APPENDIX 1
BACKGROUND INFORMATION

1.0 Authority

The Health Planning and Resources Development Act of 1974, known as P.L. 93-641, created a network of health systems agencies throughout the United States responsible for health planning and health resources development. In October of 1979, Titles XV and XVI of P.L. 93-641 were amended to revise and extend the authorities and requirements under these titles for health planning and resources development. The new law, Public Law 96-79, is entitled **Health Planning and Resources Development Amendments of 1979.**

Title XV of P.L. 96-79 addresses health planning and is responsible for establishing 213 "health service areas" nationwide. For each health service area, a health systems agency (HSA) was created. The geographic areas which these agencies represent have been designated by the respective state governors and approved by the Department of Health, Education and Welfare. In Montana, one health systems agency is designated to serve the entire state. Title XVI of P.L. 96-79 dictates the policy for the authorization of loans or grants to states for: 1) the modernization and construction of new outpatient facilities, 2) the conversion of unneeded hospital services and facilities to needed health services and medical facilities, including outpatient and long-term care facilities.

1.1 Mission and Purpose of the Health Systems Agency

Two major requirements of a health systems agency are to establish a Health Systems Plan (HSP) and an Annual Implementation Plan (AIP). The Health Systems Plan identifies the major local health problems, analyzes the resources available to meet the needs of patients experiencing health problems, and proposes improvements in the delivery of these services. The proposed improvements are formulated in terms of goals and objectives for the health care system. The Annual Implementation Plan, a derivative document of the Health Systems Plan, serves a different purpose. The AIP lists objectives for attaining the goals stated in the HSP for a one year period; it is a short-term plan for implementing the HSP. In contrast, the HSP presents a comprehensive overview of both the health of the community and the health care system and recommends long-term solutions for their improvement.

The purposes of P.L. 96-79 are to: 1) facilitate the development of recommendations for a national health planning policy, 2) augment areawide and statewide planning for health services, manpower, and facilities, and 3) authorize financial assistance for the development of resources to further that policy. Therefore, it is the function of the Montana Health Systems Agency, as stipulated by P.L. 96-79, to:

- improve the health of Montana residents
- increase the accessibility (including geographic, architectural, and transportation access), acceptability, continuity and quality of the health services provided
- restrain increases in the costs of health care services
- prevent unnecessary duplication of health resources
- preserve and improve competition in the health service area.

1.2 Montana Health Systems Agency Responsibility

The Montana Health Systems Agency is responsible for gathering and analyzing data concerning:

- the status (and its determinants) of the health of the residents of its health service area
- the status of the health care delivery system in the area and the use of that system by the residents of the area
- the effect the area's health care delivery system has on the health of the residents of the area
- the number, type, and location of the area's health resources, including health services, manpower, and facilities
- the patterns of utilization of the area's health resources
- the environmental and occupational exposure factors affecting immediate and long-term health conditions.

The Montana Health Systems Agency is required to formulate a Health Systems Plan (HSP) to be revised every three years and an Annual Implementation Plan (AIP). The triennial review and amendment of the Health Systems Plan, as prescribed by P.L. 96-79, probably will not be implemented until July of 1981, after the Department of Health, Education and Welfare (HEW) has had the opportunity to examine the Health Systems Plan for the purpose of reporting to Congress in 1982.

The Montana Health Systems Agency, under full designation, will establish an Area Health Services Development Fund. From this fund the MHSA may award grants and enter into contracts for planning and developing projects and programs in conformance with the 1980 HSP. These funds cannot be used to build new facilities or to deliver medical services.

Since the MHSA is fully designated, it will review and approve or disapprove federal grant monies under:

- the Public Health Service Act
- the Community Mental Health Centers Act and
- the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act.

The review, approval or disapproval of all federal grant funds will be dependent upon the health plan adopted for Montana.

The Montana Health Systems Agency will also review for approval or disapproval the use of federal funds within Montana made through allocations to the state under formula grant programs. Other MHSA responsibilities include:

- coordinating its activities with Professional Standards Review Organizations (PSROs) as well as with other appropriate planning and regulatory agencies
- working with the State Health Planning and Development Agency in the performance of its planning functions
- recommending to the state, on an annual basis, projects for facility modernization and construction
- reviewing, at least every five years, all institutional health services in the area.

APPENDIX 2
HEALTH CARE DELIVERY SYSTEM MODEL

1.0 Health System Overview

To provide an overview and a reference point for health plan development, it is necessary to first develop a model depicting the current health care delivery system. The model should address the goals and objectives of the Montana Health Systems Agency and should include the following:

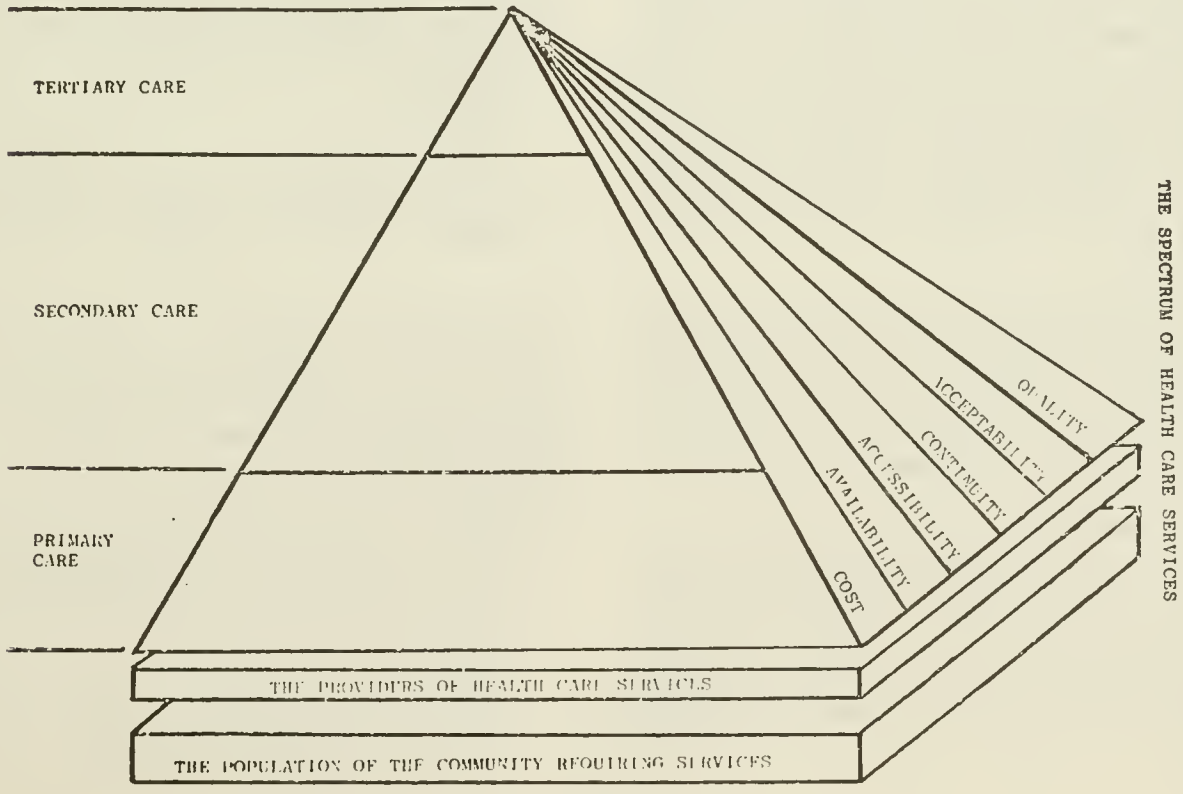
- A reflection of **service orientation** since P.L. 96-79 specifically addresses the necessity to plan for health services. HSA project review requirements, as outlined in Section 1122 of Title XI of the Social Security Act as amended (Section 221 of P.L. 92-603) and P.L. 96-79, also necessitate that the model reflect a service orientation.
- The provision of a systems approach which illustrates a method for integrating and coordinating the required resources to deliver health services and programs.
- A basis for describing the **Health Care System** as contrasted with the **Medical Care System** (generally considered the illness and treatment portion of the Health Care System).
- An incorporation of the following types of services:
  - health promotion and protection
  - prevention and detection
  - diagnosis and treatment
  - habilitation and rehabilitation
  - maintenance and support services
- A reflection of a **regional approach** toward planning to ensure the delivery of a full spectrum of health services to a defined population. In order to use specific services optimally within a region, the regional approach toward planning will have to balance the issues of cost, availability, accessibility, continuity, acceptability and quality.
- An analysis of the system that is understandable to both the consumers and the providers. Rational community participation is required in the planning process in order to establish goals and objectives, as well as in making the final Health Systems Plan decisions.

2.0 The Community Health Care System Model

A model which satisfies most of the above specifications is the community health care system model. The model is visually displayed in Figure 1 as a pyramid. It represents all of the health services available to serve the population of the planning area. The face of the pyramid represents the spectrum of health services as illustrated on the left. Special services are shown toward the top of the pyramid to illustrate that fewer services are required to serve the base planning population. The right side of the pyramid is divided vertically to illustrate six primary factors: cost, availability, accessibility, continuity, acceptability and quality.

Figure 1

The Community Health Care System Model



The planning population is shown at the base of the pyramid. Usually the population enters the health service system at the bottom of the pyramid or through a primary care provider. Ideally, people take active responsibility for their own well-being and health maintenance and, for the most part, stay out of the medical care system. If they require medical care services, they should seek these services beginning at the primary level and progress, through providers, up through the three levels of care (primary, secondary and tertiary). The type, amount and organization of the health care resources depend upon the interaction between the levels of care, the other components, and the patient flow.

3.0 The Four Different Levels of Health Care Services

Using the pyramid presented in Figure 1 as a reference, health care services are divided into four levels of care: pre-medical care, primary care, secondary care and tertiary care. The four levels of care have three characteristics which describe the organization of health services. The first characteristic is functional, i.e., the levels of care provide a method through which services can be catalogued and described by the type of service, by the area, or by the patient utilization patterns. Secondly, the levels of care apply to the planning process as they can be placed in a practical framework for the purpose of description, measurement and analysis. Thirdly, the levels of care describe general characteristics of the integral parts of the system. The levels of care are useful in describing and tracing the process by which patients are referred through the system.

- **Pre-Medical Care**
  Pre-medical care services include measures taken to improve the environment in order to preserve healthful conditions, as well as measures taken by individuals to improve and maintain their own levels of well-being. The environmental components include public services such as air pollution control, basic sanitation measures, water pollution control, solid waste and social services. The personal measures comprise those actions taken by individuals to improve or maintain their levels of health. Personal measures include stress control, weight control, exercise, nutrition, and personal safety actions. Ideally, it is in the pre-medical care level of the health system that individuals should concentrate their attention. Individuals enter the next level of care when seeking preventive medical services such as immunizations, or when they become ill and require medical attention.
- **Primary Care**
  It is at the primary care level that patients should enter the medical care delivery system. Primary care focuses on ambulatory care and those services which require a high frequency of utilization, such as routine preventive care, diagnosis and treatment of minor physical and mental illnesses, patient education, management of chronic conditions, routine dental care, and certain rehabilitative services.

  General practitioners, internists, pediatricians, and obstetricians usually administer primary medical care services. These services are also provided by other health professionals through public health departments, county clinics, hospital emergency rooms, community health centers, group practices, optometrists, dentists, voluntary health agencies, out-patient rehabilitation centers, etc. Primary care services should be available as close as possible to the consumer's home.
- **Secondary Care**
  Secondary care can be viewed as the middle ground both in terms of medical treatment and in frequency of patient utilization. Secondary care services require a greater population than primary care services to justify their development since they are utilized less frequently by the general population and usually require substantial capital investment. Even though the services are fewer in number, they will always be found within the health service area.

  Individuals requiring this level of care generally have health problems serious or complex enough to require a visit to a specialist and/or a health facility (i.e., a general hospital, nursing home or community mental health center).

  The community hospital serves as one of the major facilities for secondary care. The community hospital provides trained personnel, special diagnostic equipment, and inpatient services. Hospital services typically provided at the secondary care level include inpatient services for general surgery, medical treatment, and psychiatric diagnosis and treatment. Personal care, skilled and intermediate care, and boarding comprise the spectrum of long-term care services. The secondary level of care may also include those services generally described as residential care, day care, and rehabilitation. Other services which fall in this category are mental health, mental retardation and developmental disabilities and substance abuse services.
- **Tertiary Care**
  Tertiary care services are those special services that because of complexity, cost, and/or relatively low levels of utilization are planned to be located within a large catchment area. In some cases, these services may not be located in a health service area, either because the area is too small or because the service is too specialized. The tertiary level services represent a continuum of preventive, diagnostic, treatment and rehabilitative services for the acutely ill patient, as well as specialized services for patients with chronic, complicated and catastrophic illnesses. Tertiary care includes highly sophisticated diagnostic and therapeutic procedures such as radiation therapy, renal dialysis, and major hospital trauma emergency department services. These services are typically provided in large referral hospitals.

  Patients are usually directed to highly specialized services either because the disease or illness is difficult to diagnose or rare in occurrence, or because the personnel and technical resources available to treat the disease process are relatively scarce and/or expensive.

4.0 Criteria Considered for Provision of Service

The right-hand side of Figure 1 shows the six factors to be considered in the provision of health services. They are also the factors around which criteria and standards are usually developed. They include:

- **Cost**
  The expectations concerning results of P. L. 96-79 are high in areas such as controlling rising costs and removing financial barriers to care. The major tool the MHSA can use to influence these factors is the review of capital expenditures at the tertiary and secondary service levels. The immediate planning responsibilities of the MHSA, with respect to financial resources, are oriented toward preparing a plan which will allow for review, comment, and recommendation on capital expenditures for facilities and equipment by institutions.

The major questions to be addressed in reviews on services involving major capital expenditures are: 1) can and should the service being developed be self-supporting in a reasonable period of time? (Some services are provided in response to a "social need" and must be continually subsidized), and 2) is the service going to duplicate existing services currently being provided?

- **Availability**
  Availability deals with the supply and types of health services that can be produced given the supply and feasible allocation of resources (personnel, equipment, facilities and finances) to produce those services. A goal of the MHSA is to develop health services offered to Montanans in medically underserved areas. Inequitable resource distributions and inaccessibility of health care services are particularly evident in rural areas.
- **Accessibility**
  Accessibility deals with the ability of the population or a segment of the population to obtain available health services. This ability is determined by economic, temporal, locational, architectural, cultural, organizational and informational factors. For example, rural areas have fewer services available and rural residents must travel greater distances to gain access to health care. In addition, widely dispersed populations and communities without an organized health care system face a situation in which they are less able to plan and compete for medical resources and services.

- **Continuity**
  Continuity is concerned with the extent of effective coordination of services provided to individual patients and the community over time within health care settings.

  Health services should follow a logical progression from detection, through diagnosis and treatment, to follow-up. Screening programs should be set up so that if a suspected illness is spotted it can be diagnosed and treated. Medical specialists should strive to keep the primary physician informed on the patient's progress. Persons with chronic diseases should be followed after the initial treatment is given and the initial episode of disease overcome. All of these are aspects of continuity.
- **Acceptability**
  Acceptability is the level of satisfaction expressed by consumers of services and providers of services with the availability, accessibility, cost, quality and continuity of the health care system.

  Patient satisfaction is considered for several reasons. First, patients provide the social mandate for the very existence of health care. Second, consideration of patient satisfaction preserves the humane character of health care (caring) along with the biomedical and scientific features (curing). Finally, patients are active participants in promoting or retarding the healing process. The ultimate success of many health care interventions is dependent upon the cooperation of the patient. Patient cooperation, in turn, is dependent to some degree on the level of the patient's satisfaction and the value he or she perceives in the care.

- **Quality**
  Quality is the degree to which services provided are properly matched to the needs of the population, are technically correct, and achieve beneficial impact. Quality can be considered in three dimensions: 1) the structural aspects of resources and services; 2) the process of producing and delivering services; and, 3) the outcome of services on health status, environment, and/or behavior.

APPENDIX 3
STATISTICAL DESCRIPTION OF THE MONTANA SERVICE AREA

1.0 Introduction

The purpose of this section is to present summary information of the statistics most used in health planning and to give the reader an overview of the types of problems faced in planning health services in Montana. The statistics can be generally grouped into five areas:

1) population estimates and projections
2) socio-economic indicators
3) geographical descriptions
4) economic characteristics and
5) health status statistics.

Each of the tables presented here is extracted from published documents. More refined statistics, if needed, can be found in the original documents.

Information describing the health care delivery system, resources currently available, and utilization statistics are found in the service components which comprise the bulk of the plan. More detailed data on these services can be obtained from the Montana Health Data Management System. At the present time the Hospital Annual Reports, Long-Term Facilities Annual Reports, Physician Manpower, and Dental Manpower information are in this data base.

Data summarizing the costs of health services is currently unavailable. The State Health Plan currently being developed by the State Health Planning and Development Agency will contain sections addressing health care costs in Montana.

2.0 Population Characteristics

The Health Systems Plan serves as a blueprint for the health care delivery system five years in the future. Consequently, projections have to be made of the number of people who will be needing health care services in 1985. Throughout this document, the HSA has used 1978 estimates furnished by the Bureau of the Census to depict the current situation. To estimate population changes, projections for 1985, published by the Department of Community Affairs, were used. Both estimates used counties as their geographical base. Tables 1 through 5 compare the 1970 census population with the 1978 estimates and 1985 projections for each county and subarea.

It is well documented that different age groups use different health services. For example, children under five could be the primary target for immunizations, while females in the child-bearing years (generally between the ages 15 and 44) need prenatal and postnatal care. Males between 45 and 64 are the most prone to heart attacks and the elderly (over 65 years of age) are the primary users of long-term care facilities and home health services. Tables 6 through 10 show the estimated 1975 and projected 1985 populations for four age groups by county and subarea. These estimates were prepared by the Department of Community Affairs, State of Montana.

Finally, the largest racial minority in Montana is the Native American or American Indian, constituting 3.9% of the population. Estimates of the number of Native Americans are presented in Table 11. These estimates were prepared for the Coordinator of Indian Affairs, Office of the Governor, Helena, Montana. No 1985 projections on the number of Native Americans in Montana are available.

3.0 Socio-economic Indicators

A number of socio-economic indicators are used to determine whether or not a particular community is eligible for public health service grants. Currently there are four designations used by the federal government to determine program eligibility. These are:

1) Critical Manpower Shortage Areas -
   uses various provider to population ratios (for physicians, dentists, optometrists, psychiatrists, podiatrists, pharmacists, and veterinarians).
2) Medical Shortage Areas -
   uses a combination of physician to population ratios, percent of population over 65, percent of population below the poverty level, and infant mortality rate.
3) High Infant Mortality Area -
   uses a 5 year infant mortality rate.
4) High Migrant Impact Area -
   uses the number of migrants who traditionally come to the area.

Figures 1 and 2 of the Primary Health Care Personnel Component show those areas currently designated as Critical Primary Care Manpower Shortage Areas and Medically Underserved Areas. Figure 1 of the Dental Personnel Component identifies those counties designated as Critical Dental Shortage Areas. The following tables show by counties and subareas the statistics used in making these designations.

4.0 Geographical, Climatic and Transportation Description in Montana.

Geographic and climatic conditions in a state such as Montana are important in planning health services because of their impact upon accessibility.

To emphasize the constraints under which health services are delivered in Montana and to help explain why they have developed as they have, this section is presented.

First, the current population density (people per square mile) is presented in Figure 1. In comparison with other states, Montana has an extremely small population density. Half of Montana's counties have less than 2.8 persons per square mile; three-fourths of the counties have less than 4.4 persons per square mile.

One of the reasons for this small population base lies in the topography of Montana. As shown in Figure 2, the topography varies from the mountain crests characteristic of the western third of the state, to the elevated plains, low mountains, and erosion valleys in the central portion, to the flat terrain evident in the east. Montana, by Spanish definition, means "mountain".

The Northern Rocky Mountain region largely dominates the topography in the western third of the state. Within this boundary and to the north, the mountain ranges and narrow river valleys run parallel to one another in a northwest-southeast direction. A structural feature running in a north-south direction, the Rocky Mountain trench, harbors Flathead lake. This lake is one of the largest natural fresh water bodies in the United States. The southern portion of the mountainous area offers a random pattern of mountain

Table 1 through 5

CENSUS POPULATION

1970 Census Figures, 1978 Census Estimates and 1985 Projections of Montana's Population by County.

County	1970 [1]	1978 [2]	1985 [3]
NORTHWESTERN			
Lincoln	18,063	17,100	16,589
Flathead	39,460	50,000	56,402
Sanders	7,093	8,600	9,588
Lake	14,445	18,300	19,876
Mineral	2,958	3,800	4,325
Ravalli	14,409	21,100	21,142
Missoula	58,263	69,700	78,171
TOTALS	154,691	188,500	206,093
NORTH CENTRAL			
Glacier	10,783	11,400	11,961
Toole	8,839	5,400	5,174
Pondera	6,611	7,200	7,462
Teton	6,116	8,700	7,875
Cascade	81,804	86,400	88,274
Chouteau	6,473	7,000	6,491
Hill	17,358	19,000	19,641
Blaine	6,727	7.500	7,191
Liberty	2,359	2,500	2,697
TOTALS	147,070	153,100	156,766
SOUTHWESTERN			
Beaverhead	8,187	8,600	9,095
Madison	5,014	5,900	5,556
Gallatin	32,505	40,200	44,058
Lewis & Clark	33,281	41,000	46,931
Broadwater	2,526	3,400	3,428
Jefferson	5,238	7,600	8,169
Meagher	2,122	2,400	2,216
Silver Bow	41,981	39,800	44,457
Deer Lodge	15,652	13,900	15,482
Powell	6,600	7,600	9,015
Granite	2,737	2,800	2,801
Park	11,197	13,000	14,590
TOTALS	167,040	186,200	205,798
SOUTH CENTRAL			
Fergus	12,611	13,400	13,617
Petroleum	675	700	678
Judith Basin	2,667	3,000	2,745
Wheatland	2,529	2,400	1,923
Golden Valley	931	1,000	917
Musselshell	3,734	4,800	4,796
Sweet Grass	2,980	3,200	2,897
Stillwater	4,632	5,900	6,090
Carbon	7,080	8,500	8,889
Big Horn	19,057	10,800	12,161
Yellowstone	87,367	104,000	126,106
TOTALS	144,263	157,700	180,819

County	1970 [1]	1978 [2]	1985 [3]
EASTERN			
Valley	11,471	12,100	16,325
Daniels	3,083	3,000	3,143
Sheridan	5,779	5,200	5,144
Roosevelt	10,365	10,700	11,272
McCone	2,875	2,700	2,613
Garfield	1,796	1,800	1,784
Richland	9,837	10,800	12,093
Dawson	11,269	11,400	13,067
Wibaux	1,465	1,600	1,538
Rosebud	6,032	9,700	11,230
Treasure	1,069	1,200	1,236
Powder River	2,862	2,500	2,285
Custer	12,174	13,200	14,642
Prairie	1,752	1,900	1,915
Phillips	5,386	5,400	5,757
Fallon	4,050	4,000	4,326
Carter	1,956	1,900	1,882
TOTALS	93,221	99,100	110,252

[1] US Bureau of the Census Reports, 1970

[2] US Bureau of the Census Estimate, Provisional

[3] Montana Department of Community Affairs Projections medium series, county totals, 1977

Tables 6 through 10

1978 and 1985 Population Projections by Age Group and County.

SOURCE:
Montana Population Prjections 1975 - 2000, Division of Research & Information Systems, Montana Department of Community Affairs, August, 1977, (Medium Series).

COUNTY	TOTAL POP.		AGE 0 - 4		AGE 5 - 17		AGE 18 - 64		AGE 65+	
	1975	1985	1975	1985	1975	1985	1975	1985	1975	1985
Northwestern										
Flathead	44,600	56,402	3,611	4,679	11,754	12,791	24,640	33,309	4,595	5,623
Lake	17,100	19,876	1,425	1,603	4,434	4,551	8,906	11,210	2,335	2,512
Lincoln	16,500	16,589	1,433	1,285	4,587	3,634	9,334	10,108	1,146	1,562
Mineral	3,500	4,325	295	373	972	1,036	1,967	2,610	266	306
Missoula	64,600	78,171	5,106	6,240	14,317	14,404	40,199	51,370	4,978	6,157
Ravalli	18,400	21,142	1,321	1,630	4,523	4,483	9,728	11,886	2,828	3,143
Sanders	8,100	9,588	615	750	2,061	2,141	4,350	5,539	1,074	1,158
Totals	**172,800**	**206,093**	**13,806**	**16,560**	**42,648**	**43,040**	**99,124**	**126,032**	**17,222**	**20,461**
North Central										
Blaine	6,800	7,191	617	631	1,827	1,639	3,603	4,191	753	730
Cascade	83,900	88,274	7,668	8,195	21,061	19,503	47,921	52,875	7,250	7,701
Chouteau	6,300	6,491	496	551	1,540	1,314	3,503	3,845	761	781
Glacier	11,100	11,961	1,188	1,041	3,361	3,142	5,635	6,631	916	1,147
Hill	17,900	19,641	1,552	1,694	4,392	4,046	10,389	11,960	1,567	1,941
Liberty	2,500	2,697	190	228	671	562	1,421	1,636	218	271
Pondera	6,900	7,462	583	647	1,868	1,673	3,718	4,329	731	813
Teton	6,500	7,875	458	610	1,659	1,710	3,582	4,621	801	934
Toole	5,400	5,174	398	412	1,416	1,079	2,994	3,048	592	635
Totals	**147,300**	**156,766**	**13,150**	**14,009**	**37,795**	**34,668**	**82,766**	**93,136**	**13,589**	**14,953**
Southwestern										
Beaverhead	8,300	9,095	699	868	1,849	1,798	4,862	5,485	890	944
Broadwater	2,800	3,428	206	287	732	771	1,524	2,002	338	368
Deer Lodge	15,200	15,482	1,144	1,245	3,482	2,991	8,630	9,071	1,944	2,175
Gallatin	37,300	44,058	2,851	3,527	7,128	7,342	24,304	29,510	3,017	3,679
Granite	2,700	2,801	206	236	638	564	1,528	1,600	328	401
Jefferson	6,700	8,169	539	684	1,724	1,869	3,844	4,948	593	668
Lewis & Clark	36,900	46,931	3,008	3,865	9,247	10,526	21,020	28,090	3,625	4,450
Madison	5,800	5,556	396	422	1,367	1,072	3,163	3,223	874	839
Meagher	2,300	2,216	174	173	527	429	1,327	1,326	272	288
Park	12,100	14,590	839	1,143	2,778	3,088	6,768	8,472	1,715	1,887
Powell	7,500	9,015	568	729	1,865	1,983	4,373	5,571	694	732
Silver Bow	43,000	44,457	3,422	3,581	10,618	9,335	23,847	26,555	5,113	4,986
Totals	**180,600**	**205,798**	**14,052**	**16,760**	**41,955**	**41,768**	**105,190**	**125,853**	**19,403**	**21,417**
South Central										
Big Horn	10,900	12,161	1,221	1,055	3,138	3,162	5,780	7,053	761	891
Carbon	7,800	8,889	495	672	1,734	1,796	4,213	5,010	1,358	1,411
Fergus	13,000	13,617	927	1,040	3,232	2,705	6,892	7,811	1,949	2,061
Golden Valley	900	917	59	70	188	160	510	534	143	153
Judith Basin	2,700	2,745	193	233	646	531	1,445	1,530	416	451
Musselshell	4,200	4,796	297	373	963	1,008	2,292	2,761	648	654
Petroleum	700	678	48	50	178	144	425	435	49	49
Stillwater	5,200	6,090	351	472	1,231	1,290	2,874	3,533	744	795
Sweetgrass	3,000	2,897	210	221	630	540	1,628	1,657	532	479
Wheatland	2,400	1,923	165	126	557	347	1,309	1,096	369	354
Yellowstone	97,300	126,106	7,936	10,456	24,383	28,134	56,961	76,914	8,020	10,602
Totals	**148,100**	**180,819**	**11,902**	**14,768**	**36,880**	**39,817**	**111,697**	**108,334**	**14,989**	**17,900**
Eastern										
Carter	1,900	1,882	137	142	433	361	1,059	1,120	271	259
Custer	12,000	14,642	917	1,212	2,992	3,006	6,593	8,625	1,498	1,799
Daniels	3,100	3,143	214	259	729	600	1,699	1,808	458	476
Dawson	10,700	13,067	937	1,156	2,822	2,757	5,954	7,868	987	1,286
Fallon	4,000	4,326	342	390	1,049	915	2,206	2,549	403	472
Garfield	1,700	1,784	140	139	410	352	982	1,072	168	221
McCone	2,700	2,613	211	201	710	532	1,488	1,552	291	328
Phillips	5,400	5,757	435	471	1,417	1,243	2,830	3,302	718	741
Powder River	2,400	2,285	207	174	666	499	1,331	1,406	196	206
Prairie	1,900	1,915	123	140	408	352	1,077	1,092	292	331
Richland	9,900	12,093	797	998	2,596	2,585	5,407	7,094	1,110	1,416
Roosevelt	10,300	11,272	1,013	1,005	2,883	2,711	5,399	6,412	1,005	1,144
Rosebud	9,700	11,230	943	931	2,680	2,809	5,168	6,531	909	959
Sheridan	5,400	5,144	371	382	1,383	1,011	2,931	2,946	715	805
Treasure	1,200	1,236	94	105	318	272	653	721	135	138
Valley	13,200	16,325	1,160	1,391	3,700	3,935	7,297	9,858	1,043	1,141
Wibaux	1,500	1,538	121	135	386	319	806	892	187	192
Totals	**97,000**	**110,252**	**8,162**	**9,231**	**25,582**	**24,259**	**52,880**	**64,848**	**10,386**	**11,914**

Table 11

U. S. Census Count of Montana Population, By Race and County - 1970

	ALL RACES	INDIAN		OTHER MINORITY	
	No.	No.	Pct.	No.	Pct.
Beaverhead	8,187	31	0.4	18	0.2
Big Horn	10,057	3917	38.9	132	1.3
Blaine	6,727	1562	23.2	22	0.3
Broadwater	2,526	22	0.9	1	0.03
Carbon	7,080	29	0.4	29	0.4
Carter	1,956	3	0.2	6	0.3
Cascade	81,804	1509	1.8	1517	1.8
Chouteau	6,473	153	2.4	14	0.2
Custer	12,174	65	0.5	58	0.5
Daniels	3,083	16	0.5	2	0.06
Dawson	11,269	50	0.4	23	0.2
Deer Lodge	15,652	240	1.5	188	1.2
Fallon	4,050	13	0.3	4	0.09
Fergus	12,611	65	0.5	43	0.3
Flathead	39,460	327	0.8	147	0.4
Gallatin	32,505	99	0.3	203	0.6
Garfield	1,796	0	-	2	0.1
Glacier	10,783	4576	42.4	40	0.4
Golden Valley	931	1	0.1	0	-
Granite	2,737	20	0.7	1	0.03
Hill	17,358	1607	9.3	154	0.9
Jefferson	5,238	64	1.2	23	0.4
Judith Basin	2,667	7	0.3	4	0.1
Lake	14,445	2199	15.2	44	0.3
Lewis & Clark	33,281	486	1.5	169	0.5
Liberty	2,359	9	0.4	3	0.1
Lincoln	18,063	209	1.2	39	0.2
Madison	2,875	17	0.6	1	0.03
McCone	5,014	78	1.6	14	0.3
Meagher	2,122	12	0.6	13	0.6
Mineral	2,958	16	0.5	6	0.2
Missoula	58,263	660	1.1	282	0.5
Musselshell	3,734	2	0.05	3	0.08
Park	11,197	32	0.3	27	0.2
Petroleum	675	2	0.3	0	-
Phillips	5,386	258	4.8	13	0.2
Pondera	6,611	546	8.3	10	0.2
Powder River	2,862	34	1.2	5	0.2
Powell	6,660	98	1.5	23	0.3
Prairie	1,752	13	0.7	0	-
Ravalli	14,409	142	1.0	135	0.9
Richland	9,837	40	0.4	20	0.2
Roosevelt	10,365	3110	30.0	54	0.5
Rosebud	6,032	1820	30.2	9	0.1
Sanders	7,093	384	5.4	12	0.2
Sheridan	5,779	42	0.7	7	0.1
Silver Bow	41,983	359	0.9	147	0.3
Stillwater	4,632	23	0.5	14	0.3
Sweet Grass	2,980	2	0.06	0	-
Teton	6,116	45	0.7	5	0.08
Toole	5,839	63	1.1	5	0.08
Treasure	1,069	1	0.09	4	0.4
Valley	11,471	972	8.5	41	0.4
Wheatland	2,529	17	0.7	5	0.2
Wibaux	1,465	0	-	1	0.06
Yellowstone	87,367	1063	1.2	539	0.6
Yellowstone Nat'l. Park	64	0	-	0	-
Totals	694,409	27,130	3.9%	4,281	0.6%

NOTE: Other minority includes Negro, Japanese, Chinese, Filipino and other races, but does not include Spanish-surnamed or Spanish-speaking Americans.

SOURCE: 1970 U. S. Census.

Tables 12 through 16

Socio-Economic Indicators In Montana Counties.

Subarea & County	5 Year Infant Mortality Rate (1973-1977)	% Population Over 65 (1975 est.)	% Population Below Poverty Level (1970)	Fertility Rate (1977)
Northwestern				
Lincoln	15.2	6.9	7.1	87.1
Flathead	19.2	10.3	12.9	102.1
Sanders	22.1	13.2	14.0	126.2
Lake	13.9	13.6	22.3	132.8
Mineral	15.3	7.6	8.4	119.1
Ravalli	17.0	15.4	18.6	107.2
Missoula	12.0	7.7	11.2	85.2
North Central				
Glacier	28.4	8.2	29.5	131.6
Toole	6.6	11.0	11.6	89.9
Pondera	14.4	10.6	18.2	106.9
Teton	14.2	12.3	12.0	20.2
Cascade	18.1	8.6	10.9	91.3
Chouteau	17.7	12.1	11.6	86.9
Hill	16.8	8.8	14.8	93.4
Blaine	11.0	11.1	31.4	117.3
Liberty	30.0	8.7	8.4	122.9
Southwestern				
Beaverhead	6.2	10.7	17.4	90.2
Madison	9.0	15.1	18.1	84.4
Gallatin	14.0	8.1	11.1	76.4
Lewis & Clark	17.0	9.8	8.8	92.2
Jefferson	28.2	8.8	13.4	96.4
Broadwater	34.5	12.1	23.1	51.7
Meagher	26.2	11.8	24.9	84.5
Silver Bow	19.6	11.9	11.4	82.9
Deer Lodge	11.5	12.8	10.8	73.7
Powell	24.8	9.2	9.5	105.4
Granite	28.7	12.1	15.8	72.1
Park	10.2	14.2	14.3	93.3
South Central				
Fergus	11.7	15.0	14.9	84.5
Petroleum	0.0	7.0	17.8	91.7
Judith Basin	6.1	15.4	15.2	65.6
Wheatland	38.6	15.4	16.3	97.3
Golden Valley	13.3	15.9	11.7	103.0
Musselshell	27.6	15.4	19.2	128.0
Sweetgrass	4.9	17.7	23.6	106.6
Stillwater	11.1	14.3	13.7	106.8
Carbon	5.5	17.4	19.2	109.7
Big Horn	27.7	7.0	25.3	132.0
Yellowstone	15.2	8.2	12.1	96.0
Eastern				
Valley	14.4	7.9	16.8	98.6
Daniels	7.8	14.8	10.1	101.0
Sheridan	13.2	13.2	11.4	87.1
Roosevelt	26.3	9.8	23.3	114.0
McCone	19.6	10.8	13.8	87.3
Garfield	5.7	9.9	17.3	144.7
Richland	14.0	11.2	13.8	114.6
Dawson	15.6	9.2	8.4	88.7
Wibaux	0.0	12.5	15.2	118.5
Rosebud	13.4	9.4	25.8	204.9
Treasure	19.2	11.2	22.8	75.0
Custer	15.9	12.5	11.6	98.1
Powder River	4.0	8.2	13.0	81.1
Prairie	7.1	15.4	19.1	93.5
Phillips	14.0	13.3	16.6	103.6
Fallon	5.9	10.1	12.6	95.8
Carter	15.7	14.3	17.5	59.9

SOURCES:

1) Five-Year Infant Mortality Rates - Bureau of Records & Statistics, State Department of Health & Environmental Sciences, **Montana Vital Statistics**, 1976.
2) Percentage Population Over 65 - Montana Department of Community Affairs, Division of Research & Information Systems, **Montana Population Projections**, 1975-2000.
3) Percentage Population Below the Poverty Level -U. S. Bureau of the Census. Census of Population 1970 **General Social & Economic Characteristics**, Final Report, PC (1)-C 28 Montana.
4) Fertility Rate - Unpublished data from the Maternal & Child Health Bureau, State Department of Health & Environmental Sciences, 1976.

ranges with generally wider separating valleys. Both the mountains and the valleys are higher in the south. Highways and railroads throughout western Montana generally follow valley floors and the lowest mountain passes.

Extremes in elevation levels are primarily evident in the western portion of Montana, ranging from 12,799 feet to only 1,800 feet above sea level. Although the mountains in Montana are less subject to earthquake activity than the geologically young and active mountains found in other states, the region has experienced a number of destructive earth tremors. The most recent earthquake occurred in the Madison River region of southwestern Montana in 1959 and caused a considerable amount of local physiographic change.

Within central Montana the topography consists of isolated low mountain groups: the Highwoods, Bearpaws, Little Rockies, Judith and Big Snowys. In contrast to these mountains are the flat or rolling plains surrounding them.

East of a line from the Little Rocky Mountains to the Pryors is a topography dominated by plains. Toward the northeast the elevations drop gradually until at the point where the Missouri River and Yellowstone River exit the state, the elevation is some 2,000 feet above sea level. The rivers in this region generally have narrow flood plains, and some have valleys measuring one hundred to two hundred feet in depth.

The "badlands" are scoured landscapes with steep slopes, narrow divides, and closely spaced gullies created by the erosional action of joining rivers. Continental Pleistocene glaciation across the northern portion of the plains, north of the Missouri River, has leveled the landscape.

In a state as large and varied in topography as Montana, various climatic controls such as latitude, distance from the ocean, and the presence or absence of mountains, interact in many different ways to contribute to a variety of climatic conditions. The northeast corner of Montana generally is the coldest due to intruding arctic air from the north and northeast. The movement of arctic air into Montana can cause drastic changes in the temperature. In 1916, the temperature at Browning went from 44 degrees F to minus 56 degrees F in a period of twenty four hours, a drop of 100 degrees (44° to -56°). The coldest temperature ever recorded in Montana, as well as in the forty-eight contiguous states, was -70° F near Rogers Pass in January, 1954. The eastern half of Montana is usually the warmest during the summer months, averaging more than 72° F.

The average annual precipitation in Montana ranges from less than twelve inches in the south-central portion of the state to over one hundred inches in the mountains of the west. Overall, the State of Montana receives less than twenty inches of precipitation annually. The extreme western portion of Montana receives more than half of its precipitation in the winter; most of the rest of the state receives at least half of its precipitation during the summer, while northeastern Montana receives nearly eighty-five percent of its precipitation during the growing season.

The relationship of environmental characteristics and geographical features to the arrangement and delivery of health services is extremely important. The varied and harsh topographical and climatic conditions evident in Montana frequently make travel, especially during the winter months, difficult and at times impossible in certain regions. Many roads and highways are closed intermittently during heavy snowfall and blizzard conditions. Air travel too is often restricted during winter months because of poor visibility. Because of the travel restrictions imposed by natural causes, the patterns of utilization of health services are affected. In Montana, county and private roads equal or exceed the improved highways in terms of actual mileage. Highway density is the lowest in northcentral and

Table 17

Employment Characteristics by County and Subarea - Selected Years

County	Per Capita Personal Income Residence Adjusted Dollars				Percent in Labor Force – 1970			Employed Persons – 1970			Civilian Labor Force	
	1959	1965	1970	1974	Female 16 yrs. & over	Male 18-24 Years	Male 65 yrs. & over	% in manufac. indust.	% in wht-clr. occupatn.	% governmt. workers	1970 % unemployed	1973 % unemployed
Northwestern												
Flathead	2047	2401	3181	4506	33.2	72.3	14.7	23.0	43.3	15.8	9.8	6.4
Lake	1437	1961	2530	3462	34.3	65.7	25.0	12.1	38.0	18.9	6.5	6.1
Lincoln	2262	2645	3129	3897	30.3	85.0	21.4	27.8	34.1	15.3	10.3	9.9
Mineral	1409	2021	2788	3785	43.5	73.8	14.9	24.7	35.5	31.7	13.9	5.6
Missoula	2157	2626	3324	4548	42.2	54.0	22.4	12.1	52.5	24.4	7.6	5.8
Ravalli	1719	1989	2782	3369	32.6	74.0	22.8	13.0	38.8	23.0	7.9	7.7
Sanders	1702	2237	2608	4020	32.1	78.7	18.1	21.6	36.3	25.4	11.9	7.3
Southwestern												
Beaverhead	2286	2239	3138	4070	40.6	64.8	29.2	4.6	39.9	24.6	5.7	2.2
Broadwater	1979	2479	3110	4673	35.8	84.4	15.1	10.5	44.3	18.0	3.6	4.4
Deer Lodge	1609	2250	2997	4227	34.9	74.9	8.7	33.8	27.6	28.3	7.0	6.8
Gallatin	1896	2059	3194	4622	40.4	46.5	30.2	6.4	52.6	34.5	5.4	3.3
Granite	1950	2308	2533	3362	26.7	57.4	20.0	19.4	27.8	21.1	5.1	4.8

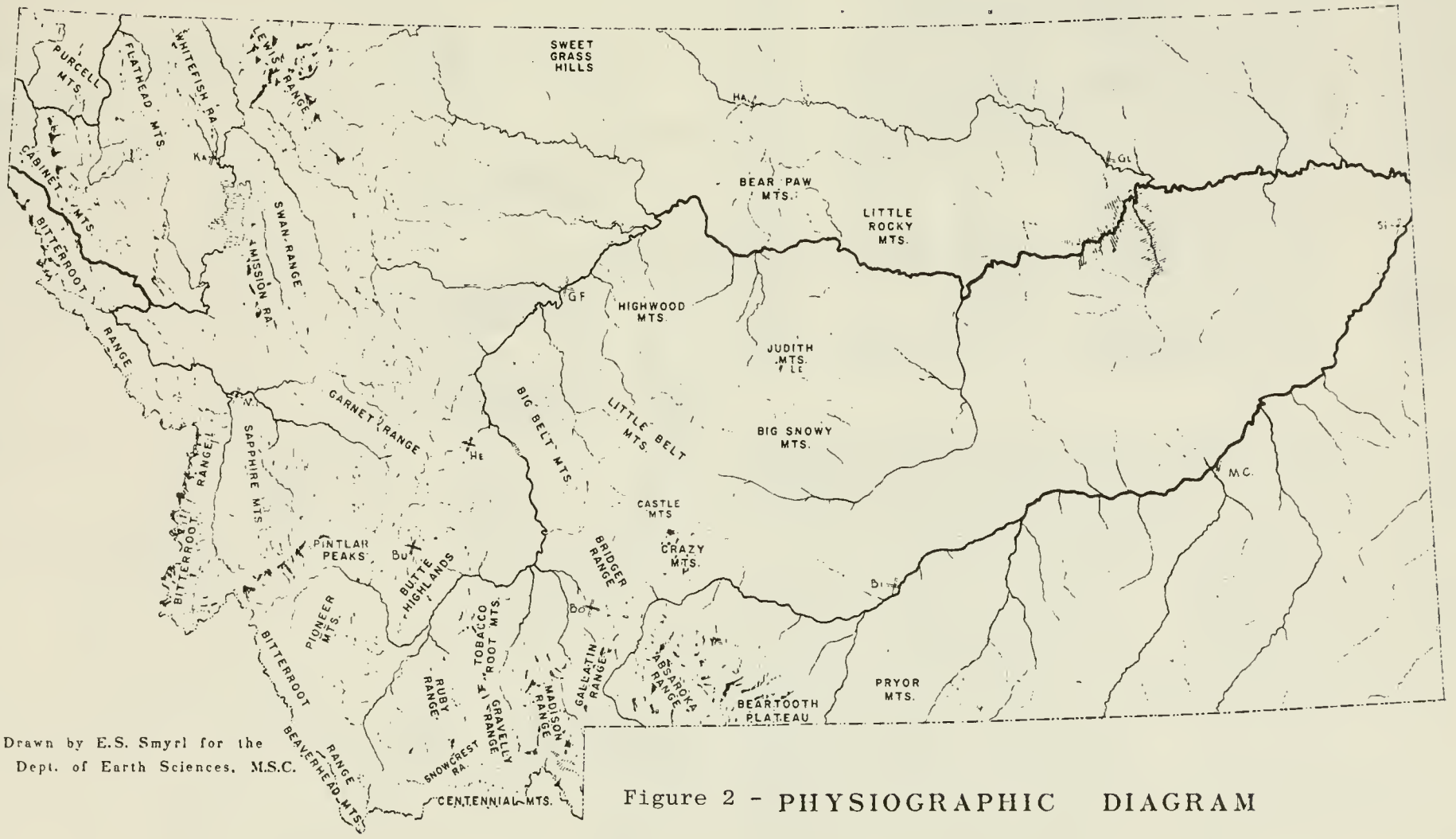
Jefferson	1706	1764	2622	3226	37.3	46.8	28.3	4.7	38.3	41.6	4.	6.2
Lewis & Clark	2365	2878	4085	5349	51.5	74.2	30.0	5.8	62.3	32.9	4.	4.6
Madison	1978	2607	3081	3102	40.0	69.5	29.2	1.7	25.1	21.0	5.7	3.2
Meagher	2336	2814	3361	4242	33.6	81.7	52.8	19.7	21.1	15.7	6.7	2.4
Park					40.1	78.5	21.4	5.0	37.7	15.0	5.6	4.2
Powell	1956	2268	2973	4089	38.7	58.8	20.9	13.2	34.0	28.3	4.7	5.1
Silver Bow	2098	2756	3476	4866	36.8	77.0	18.0	6.3	46.4	15.8	6.1	7.3
North Central												
Blaine	1686	2035	3479	5010	34.5	70.7	29.2	2.7	34.3	21.7	10.6	4.2
Cascade	2288	2638	3755	4947	40.2	88.7	17.6	12.3	52.3	18.9	6.5	5.4
Chouteau	2673	3539	5443	11878	29.0	81.9	48.5	2.8	30.6	18.2	1.9	2.5
Glacier	1622	1893	2893	4572	37.7	66.0	21.5	2.8	44.3	26.6	12.6	6.3
Hill	2108	2412	3812	6333	40.8	62.9	29.0	3.5	45.1	21.3	4.3	3.8
Liberty	3299	3009	6966	8669	37.1	84.9	22.0	1.4	38.9	25.3	0.5	2.4
Pondera	1932	2598	4454	6206	34.4	82.3	37.5	3.1	38.7	17.6	3.2	4.6
Teton	1950	2787	4337	5406	29.5	88.8	33.1	4.2	33.0	16.7	4.2	3.4
Toole	2016	2678	4922	7679	35.6	76.7	31.5	4.2	41.1	22.5	3.6	3.8
South Central												
Big Horn	1676	1826	3132	3542	31.4	75.7	32.1	10.0	38.6	29.1	4.6	6.1
Carbon	1606	1924	3472	4363	30.1	67.2	16.8	5.0	36.5	16.6	5.2	4.0
Fergus	1922	2192	3452	5060	36.0	85.5	22.6	5.0	42.9	17.1	4.9	3.0
Golden Valley	1991	2341	3407	3616	45.8	41.5	53.4	— —	23.0	23.0	4.7	4.9
Judith Basin	2279	2713	4157	5801	28.4	77.8	36.7	0.5	21.5	18.8	2.8	1.8
Musselshell	1573	2170	3268	3877	37.2	78.9	29.5	3.8	27.4	14.0	7.4	4.4
Petroleum	2090	2362	3729	2262	26.4	*	*	— —	27.2	21.8	— —	2.1
Stillwater	1842	2188	3457	4297	26.9	69.8	25.0	6.0	39.0	14.7	5.4	2.6
Sweet Grass	1730	2211	3477	3967	40.3	82.3	33.1	3.3	35.2	14.9	2.1	2.4
Wheatland	1880	2514	3613	4513	38.1	75.5	50.9	2.7	35.6	16.2	1.5	2.0
Yellowstone	2340	2669	3751	5313	42.2	70.1	24.1	8.7	53.8	14.5	5.8	3.7
Eastern												
Carter	2402	2703	3814	4846	33.8	84.2	62.0	2.9	24.3	21.6	2.4	1.9
Custer	2003	2448	3576	4588	42.2	66.3	26.1	2.7	48.7	21.9	4.7	3.6
Daniels	1509	3399	4637	10259	31.9	93.3	15.8	0.6	32.8	16.4	0.4	2.4
Dawson	1553	2241	3343	5692	39.1	79.5	31.7	3.9	39.7	15.1	3.	2.8
Fallon	1667	1967	3159	5061	33.9	89.0	31.4	1.4	33.8	13.6	5.4	1.9
Garfield	2138	2740	3977	5218	40.3	100.0	54.8	2.5	28.7	19.4	2.3	1.5
McCone	1307	2753	3356	10399	27.5	81.8	50.3	1.0	31.7	15.5	2.3	2.1
Phillips	1726	2279	3963	5788	38.7	81.1	18.2	1.9	34.9	19.9	4.3	3.6
Powder River	2306	2280	2989	5529	38.3	78.9	38.1	— —	23.0	9.7	2.9	2.6
Prairie	1782	2329	3083	5401	34.3	92.9	38.4	1.5	27.0	18.9	1.4	1.3
Richland	1384	2008	3363	5205	32.6	83.8	20.3	7.8	36.1	15.8	4.4	2.3
Roosevelt	1179	1992	3182	6331	39.2	81.7	16.7	3.7	42.7	26.8	8.8	3.7
Rosebud	1828	2278	3266	3911	43.0	85.8	32.6	7.8	35.7	24.7	4.6	4.1
Sheridan	1574	2566	3477	9781	25.6	67.7	25.7	1.3	27.4	15.8	3.0	1.6
Treasure	2195	3020	4371	4475	35.0	*	56.9	1.6	36.3	27.9	1.3	2.7
Valley	1531	2084	3995	6172	41.7	80.9	36.0	11.2	39.3	20.7	5.1	7.3
Wibaux	1799	2570	3740	5495	24.0	87.0	31.1	2.8	30.4	22.0	0.9	2.0
Montana Summary					38.6	69.7	24.2	9.7	45.3	20.8	6.2	

Figure 1

POPULATION DENSITY: MONTANA COUNTIES, 1976
(PERSONS PER SQUARE MILE)

SOURCE: BUREAU OF CENSUS AND BUREAU OF BUSINESS AND ECONOMIC RESEARCH, UNIVERISTY OF MONTANA.

----	0.4 - 1.6	LOW QUARTILE
****	1.7 - 2.7	MEDIUM LOW QUARTILE
****	2.9 - 4.4	MEDIUM HIGH QUAPTILE
****	4.7 - 57.5	HIGH QUARTILE



Drawn by E.S. Smyrl for the
Dept. of Earth Sciences, M.S.C.

Figure 2 - PHYSIOGRAPHIC DIAGRAM

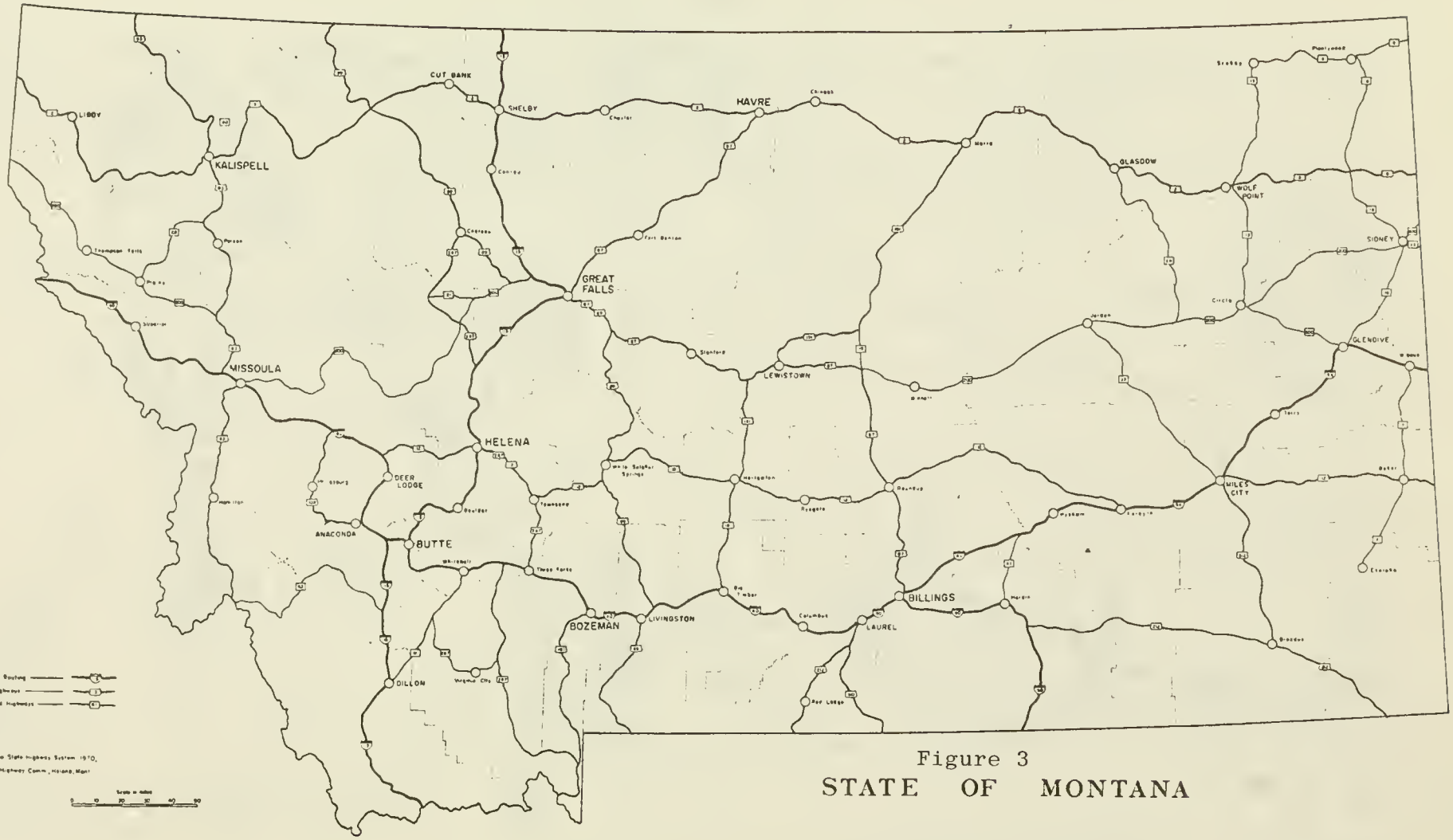


Figure 3
STATE OF MONTANA

HIGHWAYS

southeastern Montana. Figure 3 shows the major highway routes in Montana. Montana's railroad network primarily serves east-west transcontinental traffic. Airlines link the major cities of Montana with medical centers outside the state. However, many small towns can only be reached by charter airlines.

5.0 Economic Characteristics

Employment and family income within a health service area are important factors to be considered when studying the utilization rates of health services within a community. While higher income groups typically have utilized health services more frequently than lower income groups, programs that help finance medical care for lower income groups have somewhat removed the "consumption gap". While hospital admissions may be affected by these financing programs, the use of other health care services is largely determined by income. Higher income groups typically use more specialists, more preventive and more dental services.

6.0 Health Status Indicators

This section is intended to present an overview of the various indicators of health status currently available in Montana. Most of the statistics and narrative in this section have been taken from the Bureau of Records and Statistics' Report, **Montana Vital Statistics, 1977.**

Chapter 7 presents more detailed information on three health problems in Montana and discusses various strategies which might be implemented to reduce these problems.

6.1 Births

During 1977, there were 13,303 births to residents of Montana. This is a crude birth rate of 17.5 per thousand residents compared to the U. S. crude birth rate (provisional) of 15.3 per thousand for the same year. After reaching an all-time recorded low of 15.8 births per thousand in 1973, Montana's birth rate has fluctuated between 15.8 and 17.4 births per thousand since 1971; in comparison, the U. S. crude birth rate has been annually declining since the late 1960s.

In 1977, Montana experienced a natural increase of 6,907 persons, the excess of births over deaths.

Currently there is a trend toward smaller families: in 1965, 68.9 percent of the children born were the first, second, or third child in the family; in 1977, 90.3 percent of the children born were the first, second, or third child. These figures and the low crude birth rate show that Montana couples are having fewer children and smaller families. Although the 1970 census showed that 3.9 percent of Montana's population was Indian, 8.9 percent of all births (1,189) in 1977 were to Indian mothers.

National statistics indicate that the age of the mother at childbirth influences her pregnancy and the health of her child. Mothers and babies born to mothers giving birth very early or very late in their childbearing years experience more problems. Montana statistics, however, do not reflect this situation. Mothers under age 20 and over age 34 constituted 19.5 percent of all mothers in 1976. Mothers in these age groups experienced 19.9 percent of the complications during pregnancy, 19.9 percent of the complications of labor, and had 19.5 percent of the babies born with congenital malformations. Thus, there is no indication that Montana mothers in these age groups or their babies have a disproportionately larger share of pregnancy or birth-related problems.

Babies who are too small or too immature may be unable to take over the vital life functions of breathing, metabolism, excretion, and body temperature control. One in every 13 babies (7.7 percent) born in the United States is born too early (less than 37 weeks gestation), too small (weighing less

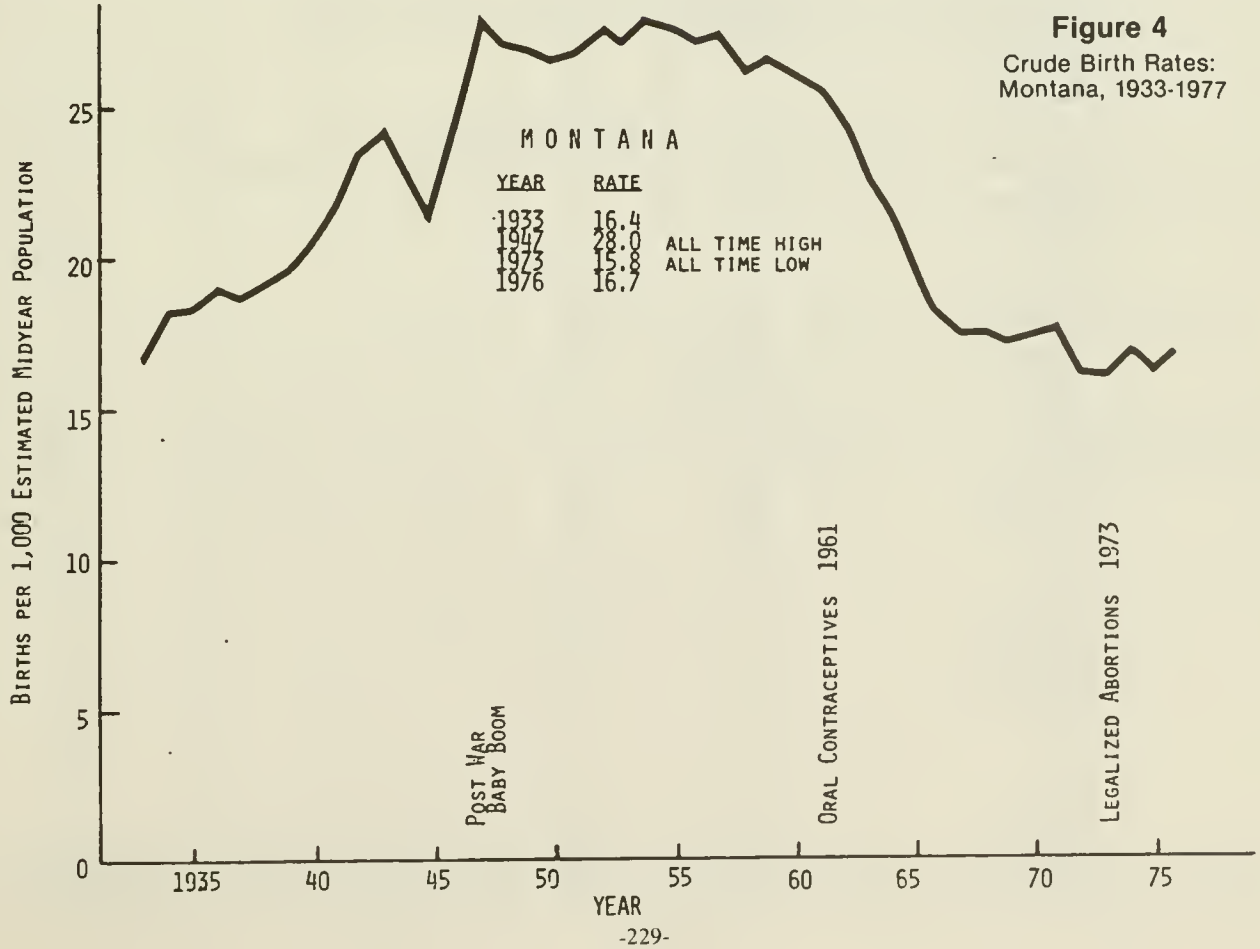


Figure 4
Crude Birth Rates: Montana, 1933-1977

Table 18

1977 Live Births by County of Residence

County	LIVE BIRTHS			
	Total	White*	Indian	Other
Montana Total	**13,304**	**11,946**	**1,189**	**169**
Beaverhead	147	144	2	1
Big Horn	265	79	186	-
Blaine	138	78	60	-
Broadwater	50	50	-	-
Carbon	120	116	3	1
Carter	19	19	-	-
Cascade	1,579	1,430	77	72
Chouteau	102	100	2	-
Custer	226	221	2	3
Daniels	52	51	-	1
Dawson	203	200	2	1
Deer Lodge	196	187	9	-
Fallon	76	76	-	-
Fergus	187	184	2	1
Flathead	787	760	22	5
Gallatin	595	578	10	7
Garfield	45	45	-	-
Glacier	273	85	186	2
Golden Valley	17	17	-	-
Granite	39	39	-	-
Hill	335	258	75	2
Jefferson	105	101	3	1
Judith Basin	29	29	-	-
Lake	329	215	110	4
Lewis & Clark	634	617	14	3
Liberty	58	58	-	-
Lincoln	322	316	4	2
McCone	44	44	-	-
Madison	71	69	1	1
Meagher	30	30	-	-
Mineral	69	65	4	-
Missoula	1,139	1,074	43	22
Musselshell	74	74	-	-
Park	189	187	2	-
Petroleum	10	10	-	-
Phillips	99	84	12	3
Pondera	130	116	14	-
Powder River	49	48	1	-
Powell	125	124	-	1
Prairie	29	28	1	-
Ravalli	269	262	5	2
Richland	213	211	-	2
Roosevelt	223	100	121	2
Rosebud	232	147	85	-
Sanders	159	148	11	-
Sheridan	87	85	2	-
Silver Bow	620	586	28	6
Stillwater	84	82	2	-
Sweet Grass	51	51	-	-
Teton	131	131	-	-
Toole	96	92	4	-
Treasure	15	15	-	-
Valley	220	191	26	3
Wheatland	40	39	-	1
Wibaux	30	29	1	-
Yellowstone	1,848	1,771	57	20

* White includes Mexican.

than 5½ pounds), or both. In Montana, 1,219 (10.0 percent) of 12,232 babies had reported gestation periods of less than 37 weeks and 833 (6.3 percent) of the 13,304 babies born in Montana were under 5½ pounds.

Several maternal characteristics are associated with low-birth-weight infants. Low-birth-weight infants are more often born to mothers who:

- are younger than age 16
- have previously given birth to a low-birth-weight infant
- are suffering from a chronic condition
- are undernourished
- smoke cigarettes
- are alcoholics
- are addicted to narcotics
- have not had regular prenatal care
- have certain genetic disorders

Nationally, statistics indicate that mothers who fall into more than one of these categories run an even greater risk of having low-birth-weight babies. For example, teen-agers are less likely to have regular prenatal care during pregnancy and they are also less likely to have a balanced diet. One in every four low-birth-weight babies is born to a teen-aged mother and mothers under age 16 have the greatest risk of giving birth to premature infants.

In Montana, one in every five low-birth-weight infants was born to a teen-aged mother: 15.45% (1,948) of all mothers were under 20 years of age but they gave birth to 20.62% (173) of the low-birth-weight infants.

In 1976, half of the Montana mothers who sought prenatal care did so by the time they had been pregnant three months. Mothers of legitimate children sought care about a month sooner than mothers of out-of-wedlock children, half of whom sought care by the time they had been pregnant four months. Less than 1% of Montana mothers received no prenatal care, but 4.72% of the mothers of children born out-of-wedlock received no prenatal care.

Nationally, mothers under age 20 or over age 34 generally seek prenatal care later in pregnancy. This is also the case in Montana.

In 1977, 4.8% (635) of all mothers experienced complications of pregnancy. Toxemia accounted for approximately 40 percent of these complications. Congenital malformations in 1977 were reported for 1.6% (206) of children born to Montana residents, an increase of .3% from 1976. Statewide, 10% of all births were delivered by caesarean section.

6.2 Deaths

There were 6,397 deaths of Montana residents in 1977, producing a crude death rate of 8.4 deaths per thousand estimated population. This represents the lowest crude death rate ever recorded in Montana. The death rate in Montana is lower than the death rate for the United States; 8.4 as compared to 8.8, respectively.

Heart Disease - There were 2,178 deaths in Montana in 1976 caused by diseases of the heart. The predominant cause was ischemic heart disease, accounting for 80.6% of these deaths; the acute form, myocardial infarction, was responsible for over half of these deaths (54.8%). Both crude and age-adjusted rates of deaths from heart disease appear to be going down, and the same pattern can be observed nationwide. In the age group 35-44, heart disease has dropped to the third leading cause of death, and is now almost half what it was in 1972.

Figure 5

RATES FOR THE FOUR LEADING CAUSES OF DEATH
Montana, 1960-76

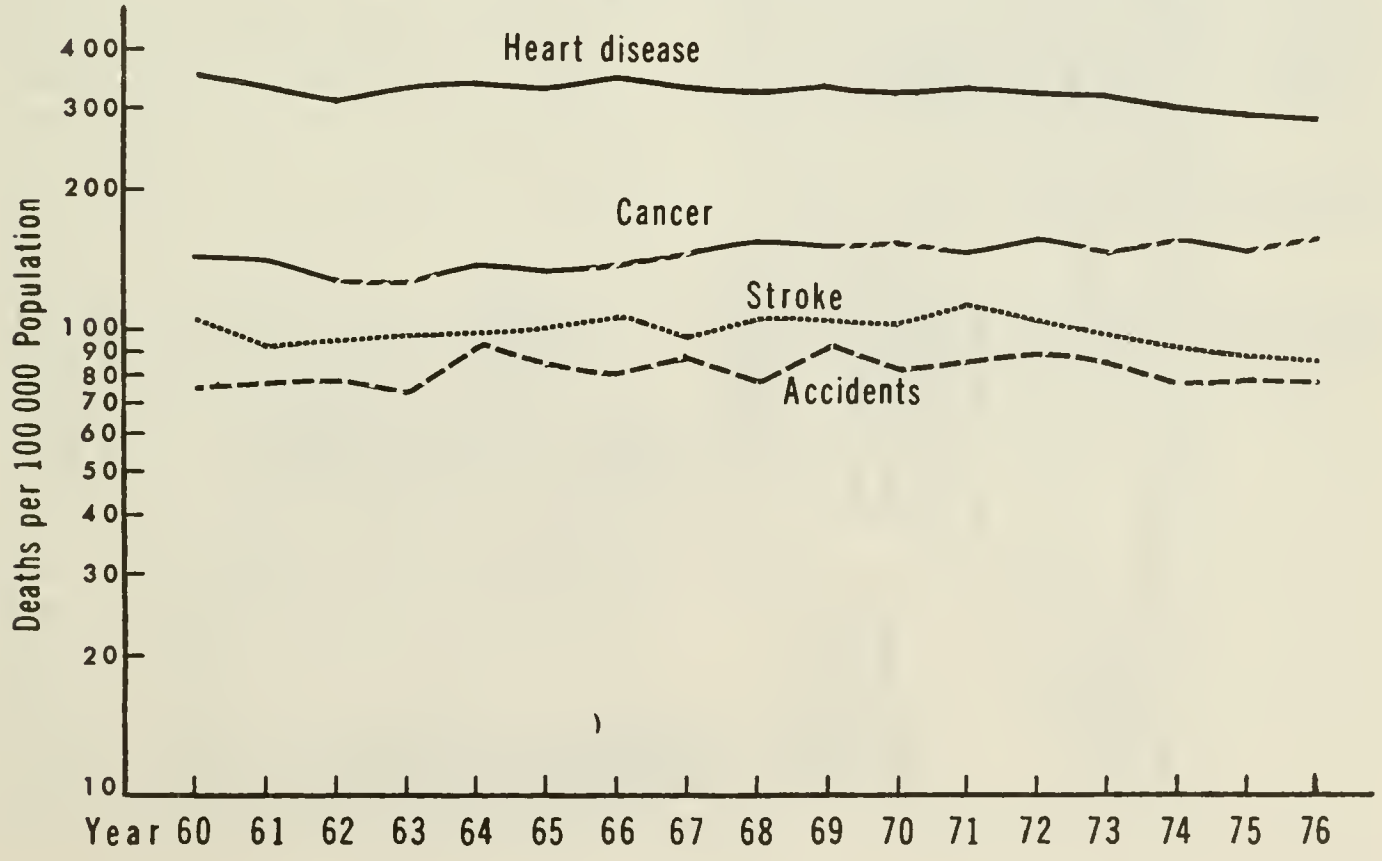


Table 19

Deaths From Selected Accidents By Age
Montana, 1977

By place of occurrence, each percent has been independently rounded to the nearest one-tenth of one percent; hence, the sums of parts may differ slightly from the totals shown.

Eighth Revision International List Number	Accidental Cause of Death	Total All Ages	Under 1 Year	1-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65 and Over	Age not Stated
		NUMBER												
	TOTAL DEATHS, All Causes	6,321	159	42	27	40	148	125	166	180	414	881	4,138	1
	Accidental Deaths, Total	597	8	25	19	27	113	85	83	46	47	41	103	-
810-823	Motor Vehicle, Total	326	1	11	7	14	82	65	50	28	28	11	29	-
800-807, 825-949	Other Accidents, Total	271	7	14	12	13	31	20	33	18	19	30	74	-
800-807, 825-845	Other Transportation, Total	25	-	-	-	-	5	4	7	2	4	2	1	-
840-845	Aircraft	9	-	-	-	-	2	1	5	-	1	-	-	-
800-807, 825-838	Other	16	-	-	-	-	3	3	2	2	3	2	1	-
850-869	Poisoning by Solids and Liquids, Total	7	-	-	-	1	-	-	2	-	2	1	1	-
850-859	Drugs and Medications	3	-	-	-	-	-	-	1	-	1	-	1	-
860-869	Other	4	-	-	-	1	-	-	1	-	1	1	-	-
870-877	Poisoning by Gases, Total	14	-	-	-	1	1	1	3	-	1	3	4	-
870-872	Utility Gas	7	-	-	-	1	-	1	-	-	-	2	3	-
873-877	Other	7	-	-	-	-	1	-	3	-	1	1	1	-
880-887	Falls, Total	65	-	-	1	-	2	1	3	1	3	3	51	-
880	On or From Stairs	5	-	-	-	-	-	-	1	-	-	1	3	-
881	On or From Ladder	1	-	-	-	-	-	-	-	1	-	-	-	-
882	From or Out of Building	4	-	-	-	-	1	-	2	-	-	-	1	-
883	Into Opening in Surface	-	-	-	-	-	-	-	-	-	-	-	-	-
884	One Level to Another	8	-	-	-	-	1	1	-	-	1	-	5	-
885-886	Same Level	-	-	-	-	-	-	-	-	-	-	-	-	-
887	Unspecified	47	-	-	1	-	-	-	-	-	2	2	42	-
890-899	Fire and Flames, Total	25	1	5	3		1	2	3	-	2	5	3	-
923	Explosions, Total	1	-	-	-	-	-	-	1	-	-	-	-	-
922	Injury by Firearms, Total	24	-	1	1	5	7	2	4	1	1	2	-	-
910	Drowning, Total	29	2	5	4	2	7	1	4	1	-	1	2	-
916	Struck by Falling Object, Total	7	-	1	1	-	1	1	1	2	-	-	-	-
900-909, 911-915 917-921, 924-949	Other Accidents, Total	74	4	2	2	4	7	8	5	11	6	13	12	-
		PERCENT OF DEATHS FROM CAUSES												
	Accidental Deaths, Total	9.4	5.0	59.5	70.4	67.5	76.4	68.0	50.0	25.6	11.4	4.7	2.5	0.0
810-823	Motor Vehicle, Total	5.2	0.6	26.2	25.9	35.0	55.4	52.0	30.1	15.6	6.8	1.2	0.7	0.0
800-807, 825-949	Other Accidents, Total	4.3	4.4	33.3	44.4	32.5	20.9	16.0	19.9	10.0	4.6	3.4	1.8	0.0

Cancer - Deaths from cancer account for 18.5 percent of all deaths. There were 1,184 cancer deaths in Montana in 1977, a rate of 155.6 deaths from cancer per hundred thousand population. Cancer of the lung continues to increase for both men and women, accounting for 22.6 percent of all cancer deaths. It is the largest single site of cancer for men, contributing to 30.6 percent of all deaths of males from cancer. Cancer of the breast accounts for 17.8 percent of all female cancer deaths.

Stroke - Diseases of the cerebrovascular system, or stroke, are most prevalent in the very old: 88% of the 576 persons dying of these causes in 1977 were more than 65 years old.

A pattern of decrease in stroke death rates has emerged in the past five years, both in the crude and age-adjusted rates.

Table 20

Crude and Age-Adjusted Rates
per 100,000 Population for Stroke:

Total and Age Group 65+

Year	65+		Total	
	age - specific	age - adjusted	crude	age-adjusted
1972	915.49	887.59	103.3	100.7
1973	869.01	842.53	98.6	96.2
1974	802.74	778.27	91.2	88.4
1975	765.33	742.01	88.2	84.7
1976	711.69	690.00	84.6	79.9

Accidents - While half of the deaths due to heart disease, cancer and stroke occur in people over 65, accidents strike among the relatively young. Median age of persons dying due to accidents was 27.5 years in 1977. Accidents accounted for 58.5% of deaths in the age group 1-4. Two-thirds of deaths in the age group 5-14 were categorized as accidental.

Motor vehicle accidents caused 50.3% of all accidental deaths, and the median age at death of victims was 26.5 years. Possibly reflecting reduced speed limits, the crude death rate due to motor vehicle accidents decreased from a high of 50.1 per 100,000 population in 1972 to 38.6 per hundred thousand in 1976, then increased to 39.7 in 1977.

Influenza - Pneumonia - There was no influenza epidemic in 1977. The number of deaths from these causes was about half of that realized in 1976. The death rate from pneumonia was the lowest death rate ever recorded and the first time that it has ever dropped below 20 (18.9 per hundred thousand estimated population).

Deaths from pneumonia and influenza are discussed together because pneumonia is a frequent complication of influenza. In some instances the attending physician may certify the death as due to pneumonia, while in other cases, the death may be assigned to influenza, the condition which initiated the chain of events leading to death.

The impact of influenza on mortality in Montana is further complicated by the fact that persons with a chronic condition are especially susceptible and the insult of influenza in addition to their pre-existing condition may combine to cause death. In such instances, the physician may select the pre-existing chronic condition as the underlying cause of death, or he may choose to certify the death as due to influenza. For this reason. total deaths are carefully monitored when assessing the effect of influenza on the population.

Suicide - There were 143 suicides in Montana in 1977, a crude rate of 18.8 per hundred thousand population. This is a high among rates for the last ten years, but may only reflect better reporting. Violence has been increasing to the extent that in the age group 15-24 years, the five leading causes of death (87.6 percent of the deaths) all involved violence. By

Table 21

Total Deaths from Pneumonia & Influenza: 1975-1977

	1975	1976	1977
Total	202	302	153
Pneumonia	185	207	144
Influenza	17	95	9

far the greatest percentage of deaths due to suicide and self-inflicted injury occur among the white population. In 1977, 93 percent of all suicides were committed by whites. The suicide rates per hundred thousand estimated midyear population for 1974 to 1977 are presented below:

1974 ..... 20.5 per hundred thousand population
1975 ..... 19.3 per hundred thousand population
1976 ..... 19.4 per hundred thousand population
1977 ..... 18.8 per hundred thousand population

Cirrhosis of the Liver - This cause of death appeared in 1976 for the first time as one of Montana's 10 most frequent causes of death. Alcoholic cirrhosis of the liver accounts for 63 of 119 cirrhosis deaths. If all natural causes mentioning alcoholism are added to all cirrhosis deaths, the rank would be seventh among 1976 deaths.

Most cirrhosis deaths (64%) occurred among males. Although 5% of all Montana deaths occurred among Indians, 20% of all cirrhosis deaths occurred within the Indian population.

Median age at death due to cirrhosis fluctuates from year to year, perhaps due to the small numbers involved. However, the median age at death due to alcoholic cirrhosis is consistently younger than that due to cirrhosis without the factor of alcoholism.

Emphysema-Bronchitis-Asthma - Emphysema, bronchitis, and asthma in 1977 had a cause-of-death rate of 15.4 per hundred thousand estimated population. This represents a slight decrease from 15.9 in 1976. However, this may be discounted by the increase in deaths reported as "chronic obstructive pulmonary disease" (COPD), a term which certifiers are more apt to use in reporting any chronic respiratory disease. Combining emphysema, bronchitis, asthma, and chronic obstructive pulmonary disease in 1977 yielded an increase in the cause of death rate to 29.8 per hundred thousand estimated population, surpassing the effects of the 1976 flu epidemic (27.1).

Infant Deaths - The infant mortality rate in 1977 was 13.8 per thousand live births, the lowest infant mortality ever recorded in Montana. However, the leading group of causes is still that of "birth injury, difficult labor and other hypoxic and anoxic conditions."

Fetal deaths increased from 8.3 per thousand live births in 1976 to 8.9 per thousand in 1977. However, due to the large drop in infant deaths, the perinatal death rate dropped from 19.8 per thousand deliveries to 17.7, also a record low.

APPENDIX 4
GLOSSARY

A-95 AGENCY - The Agency designated to implement the review and comment procedures promulgated by the Office of Management and Budget Circular A-95. In Montana, the State Clearinghouse is in the Office of Budget and Program Planning.

ACCEPTABILITY - The acceptability of health care services is a measure of consumers' satisfaction with the services they receive, the manner in which the services are delivered, the ease with which services are obtained, and consumers' confidence in the providers of the services. It has been suggested that the only way to adequately measure an individual's satisfaction with the personal health care system is to ask him/her a series of direct questions.

The individual appraises such things as the cost, quality, results, and convenience of care. Acceptability also takes into account an individual's cultural and religious attitudes. Provider attitudes should also be taken into consideration.

Acceptability becomes a consideration after (1) the services are **available**, and (2) every effort has been made to render them **accessible**. Then, the question arises as to whether people **like** the manner in which they receive care. Acceptability refers to a consumer's **perceived** or **felt** needs for health care services. Measurement of acceptability is extremely difficult because individual (1) perceptions; (2) opinions; and (3) motivations are involved.

ACCESSIBILITY - Accessibility to health care services refers to the degree to which the system inhibits or facilitates the ability of an individual to gain entry and to receive services. (Thus, accessibility includes geographic, architectural, transportation, social, cultural, temporal, financial, and administrative considerations.) Accessibility is also a function of the availability of health services, and their acceptability.

Accessibility is concerned with whether people can use services, given that they are available.

ACCREDITATION - Recognition by an organization that an institution or individual meets specific predetermined standards.

ACUTE CARE - Medical treatment for a short-term or episodic disease.

ADMISSION RATE - A measure of institution or facility use indicating the number of persons admitted during a specified time period.

ADVANCED LIFE SUPPORT (ALS) - The more advanced of two levels of emergency medical care, ALS systems provide comprehensive care in both the pre-hospital and in-hospital phases of EMS. An ALS system incorporates more specialized and advanced personnel, equipment, and techniques than are found in the first level of care---Basic Life Support.

AFFECTED PARTIES - The person whose proposal is being reviewed, members of the public who are to be served by the proposed new institutional health services; health care facilities and health maintenance organizations located in the health service area in which the service is proposed to be offered or developed, and any agency which establishes rates or standards for health care facilities.

AFFILIATION - An agreement between institutions providing for the referral or transfer of patients, and/or sharing or consultation of services.

ALLIED HEALTH MANPOWER - Is defined broadly to include the professional, technical and supportive workers in patient services, administration, teaching and research, who engage in activities that support, compliment or supplement the functions of physicians, dentists and registered nurses. In addition, all personnel engaged in organized functions (e.g. environmental engineers) are included in the Allied Health pool.

ALLOPATHIC MEDICINE - The medical philosophy ascribed to by the majority of physicians in which treatment of disease is accomplished by medical intervention. See also Osteopathic medicine.

AMBULATORY CARE - All health services provided on a walk-in or outpatient basis, in contrast to inpatient care.

AMBULATORY SURGICAL FACILITY - A facility which may or may not be a part of a hospital, which provides surgical treatment to patients not requiring hospitalization.

ANCILLARY SERVICES - Hospital services other than room and board and nursing professional services. Includes diagnostic radiology, drugs, and laboratory services.

ANGINA PECTORIS - A sudden or reccuring chest pain, with a feeling of suffocation and impending death due, most often to a lack of oxygen to the muscles of the heart.

ANNUAL IMPLEMENTATION PLAN - A document that describes short-range (12 months) objectives which will achieve the goals of the Health Systems Plan.

APPLICANT - An applicant is a person, organization or agency which submits a proposal to MHSA for review in accordance with any of its mandated review functions.

APPROVED ALCOHOL PROGRAM (approved public treatment facility) - A treatment agency operating under the direction and control of the Department of Institutions or providing treatment as set forth by R.C.M. Title 80, Chapter 27, through a contract with the Department of Institutions and approved under 80-2713.

AREA HEALTH SERVICE DEVELOPMENT FUND - Funds available to **Health Systems Agencies** in accordance with their **HSP** to stimulate planning for services and/or facilities identified as priorities in the **HSP** and **AIP.** When available, the fund will be allotted by the **HSA**.

AREAWIDE CHP AGENCY ("B AGENCY") - The regional health planning unit functioning under P.L. 89-749.

AVAILABILITY - Availability is the extent to which health care services are present in a specified geographic area. The mere presence or absence of a given service is the simplest measure of its availabillty. A better measure of availability is whether or not a particular service is present in the appropriate quantity (capacity). The extent to which health care resources (manpower, facilities, equipment) are present in an area is often used as a proxy measure of service availability.

AVERAGE DAILY CENSUS - The average number of inpatients within a facility each day for a given time period (usually one year).

AVERAGE LENGTH OF STAY - The average number of inpatient days spent by patients within a facility.

BACTERIOLOGY - The science which deals with bacteria and their relation to medicine, industry, and agriculture.

BARBITURATES - The most commonly abused sedative. They are used for the treatment of epilepsy, high blood pressure, insomnia, and in the treatment and diagnoses of mental disorders.

BASIC LIFE SUPPORT (BLS) - The first of two levels of emergency medical care, BLS systems provide the basic services necessary to stabilize a patient's condition and sustain that person's life.

BED CAPACITY - This refers to the potential number of beds, based on space intended for use, whether or not beds are actually installed. New-born beds, beds in emergency rooms, anesthesia, recovery rooms, and special diagnostic beds are usually not included.

BED COMPLEMENT - The total number of beds that are normally available in a facility. Beds excluded from the count are the same as those in bed capacity.

BED NEED FORMULA - A mathematical formula predicting the appropriate total number of hospital or long term care beds and the number of hospital or long term care beds by specialty service for a specific population in a specified year.

BLOCK GRANT FINANCING - A consolidation of functional programs into one grant.

BLUE CROSS - An independent non-profit, tax-exempt membership corporation in a specific geographic area providing insurance type protection against hospital costs.

BLUE SHIELD - An independent non-profit, tax-exempt membership corporation in a specific geographic area providing insurance type protection against the cost of surgical and other types of physician services.

BOND - A written promise by the issuer such as a hospital district to repay a sum of borrowed money on a specified date and to pay a set rate interest on the loan.

BUDGET - A detailed financial plan carrying out a program of activities over a specified period, usually a fiscal year.

CAPITAL EXPENDITURE - An expenditure which is made by or on behalf of an institution or program, not properly chargeable as expenses of operation and maintenance under generally accepted accounting principles. Capital expenditures include force account expenditures (i.e., an expenditure for a construction project undertaken by a facility as its own contractor).

CAPITAL FEE - A method of payment, in contrast to fee for service, in which a fixed rate is paid per person.

CARDIOPULMONARY RESUSCITATION (CPR) - A technique which enables a person to revive a patient whose heartbeat and breathing have stopped, by means of artificial respiration and external cardiac pressure.

CASH FLOW - The actual receipts (positive cash flows) or expenditures (negative cash flows) of dollars in the form of cash or checks.

CATASTROPHIC HEALTH INSURANCE - A health insurance plan providing coverage for costs in excess of normal liability.

CATCHMENT AREA - A defined geographic area served by a program (target area).

CATEGORICAL GRANT FINANCING - Grant funding for limited use directed to a specific objective.

CATEGORIZATION - A determination of a hospital's capability to handle emergency patients.

CENTER FOR HEALTH PLANNING - Agencies providing technical assistance and training to Health Systems Agencies and State Agencies authorized by P.L. 93-641. The Center for Health Planning for this region is the PACT Center.

CENTRAL DISPATCH - A situation in which dispatching of emergency help is conducted, in all emergencies, from one location.

CEREBRAL ANGIOGRAPHY - A procedure in which contrast material is injected into the bloodstream, thus allowing the blood vessels in the skull to be imaged by conventional X-ray techniques.

CERTIFICATE OF NEED - The process by which the value of proposed changes in health facilities and services is measured against public need. Such changes may include: construction of new facilities or development of new services, conversion of existing facilities or services and modernization of existing services or facilities. The process of certification of need calls for **Review** and **Comment** by the **HSA** and **Approval** by the DHES.

CERTIFICATION - Recognition that an individual meets predetermined standards for role performance.

CHEMISTRY - A science that deals with the composition, structure, and properties of substances and of the transformation they undergo.

CHIROPRACTIC CENTER - A health institution, licensed by the State Health Department, which is planned, organized, operated and maintained to offer facilities, help and services to persons desiring chiropractic treatment under the supervision of persons licensed to practice the chiropractic system of therapeutics, as distinguished from medical and surgical treatment as defined in the Medical Practice Act of the State of Montana.

CHRONIC CARE - The treatment of chronic disease where long-term treatment is required.

CLINIC - An outpatient facility for diagnosis and treatment.

CLINICAL BIOCHEMISTRY - The chemistry of living organisms and of vital processes, especially as it relates to patient care.

CLINICAL PATHOLOGY - Pathology applied to the solution of clinical problems, especially the use of laboratory methods in clinical diagnosis.

COINSURANCE - A cost sharing provision in most health insurance policies where the insured is required to pay a percentage of health care cost.

COMMUNITY CLINICS AND EMERGENCY CENTER - A health institution, licensed by the State Health Department, which is planned, organized, operated and maintained to provide basic community facilities and services for the diagnosis and treatment of individuals requiring outpatient services and emergency care, including inpatient accommodations for emergency care.

COMMUNITY MENTAL HEALTH CENTER - A physical plant or a group of mental health services under unified administration and including at least the following: 1. Inpatient services; 2. Outpatient services; 3. Day hospitalization; 4. Emergency services; 5. Consultant and educational services provided principally for mentally ill persons residing in a particular community or communities in or near which the facility is situated. The term "unified administration" shall mean either alone or in conjunction with other facilities owned or operated by a licensee or affiliated with the licensee.

COMPREHENSIVE HEALTH PLANNING (CHP) - The previous system of area-wide health planning agencies and state agencies functioning under P.L. 89-749. Included in this system were 314 (b) Agencies which served locales and 314 (a) Agencies which acted as the agency which coordinated the activities of the 314 (b) Agencies on a statewide basis.

CONDITIONAL DESIGNATION - A limited period (up to 24 months) in which an **HSA** or **SA** is required to gear up for and carry out those functions specified for it under P.L. 93-641.

CONSUMER - Persons who are neither direct nor indirect providers of health care and who make up a majority of membership of an **HSA** Governing Body and the **SHCC**.

CONTINUITY - Continuity refers to the degree of coordination present in the delivery of health care services to each consumer. Continuity is a measure of the extent to which the health system interrelates and integrates various services delivered to a consumer over time and in various settings.

Continuity of the health care system is the degree of coordination of services, their correct sequencing and timing, the interrelationships within the system, and the interaction of the consumer with the health system.

Continuity also refers to the existence of patient care management, in which a continuing record of services received, conditions reported, and planned program of service use is maintained. Usually refers to the use of services for a single illness episode. The integration of prescribed services, considering the person as a whole, is sought.

CONVALESCENT CENTER - A health institution that is planned, organized, operated and maintained to offer facilities and services to inpatients requiring restorative care and treatment, and that is either an integral patient care unit of a general hospital or a facility physically separated from but maintaining an affiliation with all services in a general hospital.

COOPERATIVE HEALTH STATISTICS SYSTEM (CHSS) - A program in which federal, state, and local governments cooperate in collecting health statistics. Statistics will be collected in the areas of health manpower, health facilities, hospital care, household interviews, ambulatory care, long-term care, and vital statistics.

COSTS - The total economic value of resources required to provide services, including all financial expenditures, especially expenditures for capital and operating requirements.

COST BENEFIT ANALYSIS - A procedure which attempts to relate program costs to the results of program activities, expressed in monetary units, to aid in determining the best monetary investment.

COST CENTER - An accounting procedure where costs are attributed to hospital units such as emergency or radiology rather than to services such as hospital-wide nursing or laundry.

COST CONTAINMENT - Formal activity related to the control of health services costs through efforts such as improved efficiency, utilization review, claims review, or other programs.

COST EFFECTIVENESS ANALYSIS - Procedure in which a program's costs are calculated and alternative ways are compared for achieving a specific set of results (benefits).

COST OUTCOME ANALYSIS - The procedure which relates program costs to program results (outcomes) without translating outcomes into economic indicators, i.e., the determination of the minimum costs that are necessary to produce a given outcome.

COUNCIL OF GOVERNMENTS (COG) - Multi-jurisdictional cooperative association of local governments to permit a com-

prehensive approach to problems that affect the region as a whole. COGs are substate regional planning agencies established by states and are responsible for areawide review of projects, development of regional plans, and other special purpose arrangements.

CREDENTIALING - The recognition of acceptability in meeting the standards of registration, certification, or licensure of manpower or facilities.

CRITERIA - Generally acceptable guidelines of performance upon which recommendations and decisions are based for various review functions.

CRITICAL CARE - Care provided in an acute or crisis situation. EMS systems refer to ten critical care categories for which acute care is planned.

CYTOLOGY - A branch of biology dealing with the structures, function, multiplication, pathology, and life history of cells.

DATA - Detailed information of any kind, usually refers to statistical information.

DAY CARE - Services that are provided on a business day basis rather than around the clock. Day care services include mental health services, rehabilitation, and child care services.

DEBT SERVICE - The principal amount of a loan and the interest on the loan which a borrower agrees to pay in periodic payments over a specified period of time.

DEDUCTIBLE - A provision in health insurance policies by which the insured pays a specified minimum loss before the insurer provides coverage.

DEFINITIVE CARE - Measures taken to correct or limit illnesses or injuries which interfere with normal body functions.

DEMAND - The degree which the consumer is willing and able to purchase health services.

DENTAL HEALTH SERVICES - All preventive, therapeutic, and educational services pertaining to the teeth, oral cavity, and related structures.

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE - The federal level executive branch agency charged with the implementation of most federal health programs.

DEPRECIATION - The decline in value of capital assets due to use and/or age.

DESIGNATED PLANNING AGENCY (DPA) - A state agency which administers the capital expenditure review functions under Section 1122 of the Social Security Act. The DPA in Montana is the State Health Department.

DEVELOPMENTAL DISABILITY - A chronic disability or impairment originating prior to age eighteen which is related to intellectual function.

DIAGNOSIS - The process of determining by examination the nature and circumstance of a diseased condition.

DIALYSIS TREATMENT CLINIC - A health institution or a department of a licensed hospital planned, organized, operated and maintained to provide outpatient treatment by means of hemodialysis and/or training for home use of hemodialysis equipment.

DIRECT COST - A cost identifiable with a specific program activity.

DIRECT PROVIDER - Individuals whose primary activity is the provision of health care, or the administration of facilities or institutions in which such care is provided.

DISABILITY - A limitation of an individual when in composition to others of similar age, sex and occupation. A disability may be physical, mental or social in nature.

DISEASE - A disorder or impairment of the normal state of being.

ECHOENCEPHALOGRAPHY - A procedure in which ultrasonic waves are directed at the head and their reflections are detected and analyzed to acquire information about distortions in the shape of the brain.

ECONOMIC FEASIBILITY - Evaluation of a program's potential for success based on factors such as construction and equipment costs, revenue sources, services costs, and population economic indicators.

ELECTROENCEPHALOGRAPHY - Recording of the electric currents developed in the brain by means of electrodes applied to the scalp or the surface of the brain, or placed within the substance of the brain.

EMERGENCY DEPARTMENT - The organized facilities and services provided primarily for the management of out patients coming to the hospital for emergency care. The department is also sometimes referred to as emergency room, accident room, or casualty room.

EMERGENCY MEDICAL SERVICES (EMS) - Medical, transportation, and technical services that are provided for the treatment of trauma and other types of medical emergencies.

EMS AREA or REGION - The geographic boundaries within which an EMS system is organized. These boundaries are generally determined by a combination of medical trade areas, political boundaries and geographic or topographic barriers.

EMS DISPATCHER - A person trained to receive calls for emergency medical help, assess the situation and dispatch the necessary services in an expedient and coordinated manner.

EMS SYSTEM - A structure that establishes procedures and protocol for the provision of EMS so that all services work together to provide the full range of care needed by each patient.

EMERGENCY MEDICAL TECHNICIAN (EMT) - A health professional who provides first aid and other life support measures to emergency patients under the supervision of a nurse of doctor. There are two levels of EMTs --- the EMT-A who has been trained in a 82-hour course primarily for ambulance attendants and the EMT-P who has completed a minimum of 120 hours of training in basic and advanced life support techniques. The EMT-P also is referred to as a paramedic.

ENVIRONMENTAL HEALTH - The aspect of public health involving man's surrounding environment: air, water, sewage, food, drugs, sanitation, and other conditions that may exert an influence on man's health and well-being.

EVALUATION - An assessment or examination in which actions and their results are measured against predetermined norms in order to choose among alternatives for the future.

EXECUTIVE COMMITTEE - A committee of the Health Systems Agency governing body that has authority to take actions on behalf of the governing body.

EXISTING SERVICE - Those services currently offered or available in a **Health Service Area**.

EXPERIMENTAL HEALTH SERVICES DELIVERY SYSTEM (EHSDS) - A federal program, currently being phased out, to develop, test and evaluate the organization and operation of coordinated communitywide health services management systems.

EXTENDED CARE FACILITY (ECF) - A skilled nursing facility that lodges patients who need a long time to recover from an illness or operation but do not need to stay in a hospital during that time.

FACILITY - The buildings, grounds, supplies, and equipment which are used or occupied by an organization or one of its units.

FACILITY FOR THE MENTALLY RETARDED (MR) - A facility especially designed for the diagnosis, treatment, education, training, or custodial care of the mentally retarded, including facilities for training specialists and sheltered workshops for the mentally retarded, but only if such workshops are part of facilities which provide or will provide comprehensive services for the mentally retarded.

FEE FOR SERVICE - The type of billing system where a patient is charged for each medical encounter in accord with the services provided.

FIDUCIARY INTEREST - A relationship in which an individual or organization has an explicit or implicit obligation to act in behalf of another person's or organization's interest.

FINANCIAL FEASIBILITY - The determination of a program's ability to balance operational income and expenses.

FIRST RESPONDERS - People with limited first aid training who can provide care to an emergency patient until ambulance or Quick Response Unit personnel arrive. First responders are quite often safety personnel.

FIXED COSTS - Costs that do not vary with the level of output.

FOREIGN MEDICAL GRADUATE (FMG) - A physician trained by a medical school outside of the United States.

FORMULA GRANT - A type of federal grant to states which is automatically available on submission of an acceptable program for their use. The amount is usually determined by a state's population and per capita income.

FULL DESIGNATION - A status conferred on a DHES and/or HSA by the Secretary of HEW where all the statutory functions under P.L. 93-641 must be performed.

FUND ACCOUNTING - A system of accounting which establishes separate accounts for specific activities.

GENERAL ACUTE CARE HOSPITAL - A hospital that provides acute care services to the general public.

GENERAL HOSPITAL - A health institution planned, organized, operated and maintained to offer facilities, beds and services over a continuous period exceeding twenty-four hours to individuals requiring diagnosis and treatment for illness, injury, deformity, abnormality or pregnancy.

GOVERNING BODY - A board of directors with an Executive Committee responsible for the organization and performance of an HSA. The qualifications for seating on a governing body are spelled out in Section 1512 (b) (3) (C) of P.L. 93-641.

GRANDFATHER CLAUSE - A provision of law that permits continued status to an entity despite changes in the law that would make them currently ineligible.

GROUP PRACTICE - A formal arrangement between three or more health professionals providing services where resources are combined and shared.

HALLUCINOGENS - Drugs which distort perception, produce dream images and hallucinations, are known as hallucinogens, psychotomimetics, dysleptics, or psychedelics. Mescaline, peyote, LDS, and STP are the most commonly abused drugs in this classification.

HEALTH - Defined by the World Health Organization as a "state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."

HEALTH CARE FACILITY - All building units in which health care services are provided. All health care facilities in Montana require a license or a Certificate or Compliance by the Montana Department of Health.

These facilities include:

General Hospitals
Psychiatric Hospitals
Community Clinics and Emergency Centers
Convalescent Centers
Chiropractic Centers
Community Mental Health Centers
Facilities for the Mentally Retarded
Nursing Care Facilities
Intermediate Care Facilities
Maternity Hospitals
Dialysis Treatment Clinics
Rehabilitation Centers
Other Similar Institutions

HEALTH CARE SYSTEM - A grouping of interrelated, sometimes independent components (manpower, facilities, equipment and dollars) designed to achieve a set of health-related goals.

HEALTH INSURANCE - Indemnity coverage against financial losses associated with the treatment of a health problem.

HEALTH MAINTENANCE ORGANIZATION - A public or private organization organized under the laws of the State of Montana which provides or otherwise makes available to enrolled participants health care services, including at least usual physician's services, hospitalization, laboratory, x-ray, and emergency and preventive services and out-of-area coverage. An HMO is compensated, except for co-payments, for the provision of the basic health care services by enrolled participants on a pre-determined periodic rate basis. Physicians services are provided directly through physicians who are either employees or partners of such organization or through arrangements with individual physicians or one or more groups of physicians, organized on a group practice or individual practice basis.

HEALTH MANPOWER - All individuals employed in health related professions.

HEALTH PLANNING - The organization of activities or projects intended to improve the population's health through the coordination and development of health resources.

HEALTH PLANNING CENTER - A center established to serve a region of the Department of HEW by providing technical assistance and training to **HSAs** and **SHPDAs**.

HEALTH RESOURCES - Human, monetary, or material resources used in providing health care and health care services.

HEALTH SERVICE AREA (HSA) - The geographic area established by the Secretary of HEW for which a health systems agency will be formed.

HEALTH STATUS - The state of health of an individual, group or population. Measurements may be accompanied by the evaluation of health status indicators.

HEALTH SYSTEMS AGENCY (HSA) - A non-profit, governmental or quasi-governmental entity **conditionally** or **fully** designated by the Secretary of HEW to carry out health planning and implementation functions for a **Health Service Area**.

HEALTH SYSTEMS PLAN (HSP) - A detailed statement of goals and five-year long-range objectives that describe the health status, health system, and environment of the community. The HSP will assure quality health services that are available and accessible in a manner that assures continuity of care at reasonable cost and which is responsible to the unique needs and resources of the area.

This plan deals with a wide range of health care matters and delineates goals and objectives which, when achieved, will improve the quality, quantity, availability and accessibility of services to the public in the area. Each HSP is reviewed by the **State Health Planning and Development Agency** and integrated into a **State Health Plan** which is approved by the **Statewide Health Coordinating Council**.

HEMATOLOGY - A branch of biology which deals with the blood and blood forming organs.

HILL BURTON - A program of federal support for construction and modernization of hospitals and other health facilities. The program has been modified under Title XVI of P.L. 93-641.

HISTOPATHOLOGY - Pathology dealing with a branch of anatomy that deals with the minute structure of animal and plant tissues as discernible with the microscope.

HOME HEALTH CARE - Health services rendered to an individual as needed in the home, usually of nursing skill nature. Provision of home health care may be in many instances in place of institutionalization.

HORIZONTAL CATEGORIZATION - A classification of levels of hospital emergency capability by a predetermined scheme.

HOSPITAL - An institution which is licensed by the State Health Department and engaged in providing to inpatients and outpatients, by or under the supervision of physicians, diagnostic services and therapeutic services for medical diagnosis, treatment and care of injured, disabled or sick persons, or rehabilitation services for the rehabilitation of injured, sick or disabled persons.

HYALINE MEMBRANE DISEASE - Cause of newborn death involving respiratory tract.

IMMUNOHEMATOLOGY - The branch of medicine dealing with diseases of the blood in which the cause, the development of disease, or the clinical manifestations have been shown to be determined by an antigen-antibody reaction.

INCIDENCE - An epidemiologic term referring to the number of cases of a disease having their onset during a prescribed period of time in relation to the population unit in which they occur.

INDEMNITY - A contract or assurance by which one person engages to secure another against losses, e.g., insurance.

INDIRECT COST - A cost which cannot be identified directly with a particular activity, service or product of the program experiencing the cost.

INDIRECT PROVIDER - An individual or organization with a fiduciary or other indirect interest in the delivery of health care services.

INFORMATIONAL/REFERRAL - A facility that directs people with alcohol or drug problems to available resources.

INFORMATION SYSTEM - A set of procedures, methods, organization, software, and hardware elements used to file and retrieve information for planning and decision making.

INITIAL CONTACTS - A person makes an initial contact when he seeks help or information from a program for the first time. The person may or may not become a client of the program, but persons seeking help because of another's problem are also considered initial contacts. Only those persons encountered on a face-to-face basis are counted as initial contacts.

INPATIENT CARE - Treatment of patients who have been admitted overnight or longer to a facility.

INSTITUTIONAL HEALTH SERVICES - Health services provided through health care facilities and health maintenance organizations.

INTERMEDIATE CARE FACILITY (ICF) - A health related institution, licensed by the State Department of Health, which is planned, organized, operated, and maintained to provide facilities and services which are supportive, restorative and preventive in nature, with related social care, to individuals who because of a physical or mental condition, or both, require care in an institutional environment but who do not have an illness, injury or disability for which regular medical care and 24-hour nursing services are required.

JOINT COMMISSION ON ACCREDITATION OF HOSPITALS (JCAH) - A private, non-profit organization that encourages and monitors high standards for institutional medical care.

LICENSE - A permission granted to an individual or organization by competent authority, usually public, to engage in a practice, occupation or activity otherwise unlawful. It is usually granted on the basis of examination and/or education rather than on measures of performance.

LIFE SAFETY CODE - A fire safety code prepared by the National Fire Protection Association, the provision of which must be met by facilities certified for participation under Medicare and Medicaid.

LONG-TERM CARE - Health and/or personal care services required over an extended period by persons who are chronically ill, aged disabled or retarded.

LONG-TERM CARE FACILITY - An institution, or a distinct part of an institution, primarily engaged in providing to inpatients skilled, intermediate, or sheltered nursing care and related services for patients requiring medical nursing or rehabilitation services, and licensed by the State Department of Health.

MAJOR PURCHASERS OF HEALTH CARE - Entities other than providers of health care involved with obtaining health services for employees, members, or beneficiaries.

MALPRACTICE - Professional misconduct or lack of ordinary skill in the performance of a professional act.

MATCHING FUNDS - Funds made available to an organization by a supporting agency in a specified percentage that matches a contribution from another agency.

MATERNITY HOSPITAL - A health institution planned, operated, and maintained to offer medical and nursing facilities, help and services over a continuous period exceeding 24 hours to women requiring care before, during and after obstetric delivery.

MEDICAID (TITLE XIX) - A federally aided, state operated and administered program which provides medical benefits for certain low income persons in need of health care.

MEDICAL AUDIT - Detailed retrospective review and evaluation of selected medical records by qualified professional staff. Professional performance is evaluated by comparing it with accepted criteria, standards and professional judgment.

MEDICAL EMERGENCY - An emergency in which the patient may die or become permanently disabled without immediate medical attention.

MEDICAL FACILITY - Any outpatient or inpatient medical treatment site.

MEDICAL RECORD - A record kept on patients which contains sufficient information to identify the patient clearly, justify diagnosis and treatment, and accurately document the results.

MEDICALLY UNDERSERVED POPULATION - An urban or rural area designated by the Secretary (DHEW) as having a shortage of personal health services or a population group designated by the Secretary as having a shortage of such services.

MEDICARE (TITLE XVIII) - A nationwide health insurance program for people aged 65 and over, for persons eligible for Social Security disability payments for more than two years, and for certain workers and their dependents who need kidney transplantation or dialysis.

MENINGITIS - Inflamation of the three membranes that envelop the brain and spinal cord.

METHODOLOGY - The principles and approach used to organize information.

MICROBIOLOGY - The science which deals with the study of microorganisms, including bacteria, molds and pathogenic protozoa.

MICROWAVE SYSTEM - A system which improves communications capabilities in mountainous areas by allowing the transmission of high frequency radio waves from an initial point to a tower and then to the desired receiver.

MOBILE INTENSIVE CARE UNIT (MICU) - A vehicle with the space, equipment, supplies, communications and capabilities necessary for the provision of supportive, definitive and therapeutic emergency medical care for the ill or injured, both on site and during transport, by specially qualified personnel. Such vehicles are to be affiliated with a designated hospital.

MODERNIZATION - Health facility and equipment renovation, repair or replacement.

MONTANA FOUNDATION FOR MEDICAL CARE - The organization designated as the Professional Standards Review Organization in Montana.

MONTANA MEDICAL EDUCATION & RESEARCH FOUNDATION (MMERF) - An organization that provides continuing medical education.

MONTANA STATUTE - The Montana Certificate of Need Law amending Sections 69-5201 and 69-5212 or R.C.M. 1947, and new section 69-7303.

MORBIDITY - The extent of illness, injury, or disability in a defined population.

MORTALITY - The number of deaths in a specified population.

MYCOLOGY - A branch of science dealing with fungi.

NARCOTICS - Drugs which produce insensibility or stupor due to their depressant effect on the central nervous system. Included in narcotics are: opium, opium derivatives (morphine, codeine, heroin), and synthetic opiates (merperidine, oxycodone, methadone). Cocaine is also considered a narcotic for law enforcement reasons, even though it is actually a stimulant.

NATIONAL COUNCIL ON HEALTH PLANNING - A fifteen (15) member advisory council that monitors implementation of P.L. 93-641, consults on the development of national health planning guidelines and evaluates the role of new medical technology in the health system.

NATIONAL HEALTH INSURANCE (NHI) - Universal health insurance coverage. Various NHI proposals are being debated by the U.S. Congress.

NATIONAL HEALTH PLANNING GUIDELINES - A series of guidelines promulgated by the Secretary of HEW which set standards respecting the appropriate supply, distribution and organization of health resources. These guidelines include a statement of national health planning goals.

NATIONAL HEALTH PRIORITIES - Priorities established by the Congress for health planning, as spelled out in P.L. 93-641.

NATIONAL HEALTH SERVICE CORPS - A program that assigns health care personnel to critical manpower shortage areas.

NECROPSIES - Examination of bodies after death.

NEED - A condition whereby consumers experience a lack (either real or perceived) of necessary health care services; also, the appropriate amount and kind of services to be provided.

NEEDS ASSESSMENT - An estimate of what kind of health services should be provided for a given area or population.

NEIGHBORHOOD HEALTH CENTER - A community health service center providing primary health care services to individuals in a specified target area.

NEW INSTITUTIONAL HEALTH SERVICES - Health services provided in or through health care facilities or health maintenance organizations which were not provided for at least a 12-month period prior to an application for review.

NINE-ELEVEN (911) - A three-digit emergency telephone number accepted by the Bell Telephone System as the nationwide emergency number.

NON-CONFORMING BEDS - Hospital beds that are deficient due to: 1) unsuitable structural frame, 2) fire and safety deficiencies, 3) unsuitable room and environment or 4) inadequacy of ancillary services.

NON-METROPOLITAN - Areas that are not U.S. Census Bureau Standards Metropolitan Statistical Areas (SMSAs).

NON-PROFIT - A program that is: 1) tax exempt, and 2) returns all revenues to its operation rather than payment of dividends to investors.

NON-SYPHILIS SEROLOGY - A laboratory category of serology tests, which includes all those not related to tests for syphilis.

NUCLEAR OR RADIOISOTOPE BRAIN SCANNING - A diagnostic procedure involving the injection of radioisotopic material into the bloodstream and the scanning of the head by a camera which detects and records the radioactivity. Areas with abnormal concentrations of radioactivity are presumed to be damaged.

NURSE - An individual trained and qualified by law to provide nursing services. Categories include Registered Nurse (RN), Licensed Vocation Nurse (LVN), and Licensed Practical Nurse (LPN).

NURSE PRACTITIONER - A registered nurse trained to provide primary care services independently but under the supervision of a physician.

NURSING HOME - Institutions other than hospitals providing maintenance, personal, and nursing services to individuals unable to care for themselves.

OBJECTIVE - A quantifiable target or goal with a timeline for achievement.

OBLIGATION FOR A CAPITAL EXPENDITURE - An obligation for a capital expenditure shall be deemed to have been incurred:

1. When an enforceable contract is entered into for the construction, acquisition, lease or financing of a capital asset; or
2. Upon the formal internal commitment of funds by a facility for a force account expenditure which constitutes a capital expenditure; or
3. In the case of donated property, the date on which the gift is completed.

OCCUPANCY - The ratio of average daily census to licensed beds usually expressed as a percent. Occupancy rate may also be determined by dividing the number of patient days per year by available bed days (365 times the number of licensed beds).

OCCUPATIONAL HEALTH - Health care and health and safety services in the context of the work environment.

OMB CIRCULAR A-95 - Office of Management & Budget regulations affecting certain Federal grant and loan applications.

OPEN MEETING - A public meeting to allow community participation in policy decisions.

OTHER SIMILAR INSTITUTION - A health institution, licensed by the State Health Department which is planned, organized, operated and maintained to conduct a program of medical treatment and nursing care and/or supervision which by its nature does not fit into any of the preceeding classifications defined by the State Health Department. The institution shall be planned, constructed, organized, operated and maintained to furnish care and treatment for the individuals whom it serves.

OPERATIONS RESEARCH - The application of scientific and mathematical methods to the study of complex problems not traditionally considered within the field of scientific inquiry.

OSTEOPATHIC MEDICINE - A school of medicine traditionally oriented to the adjustment of the medical organism; currently identical to allopathic medicine with the exception of greater use of physical manipulations.

OUTPATIENT HEALTH CARE - Services provided to a patient on an ambulatory basis at a health facility without hi sbeing admitted to that facility.

PARASITOLOGY - The science or study of parasites and those infected with parasites.

PATHOLOGY - The study of the essential nature of diseases and especially of the structural and functional changes produced by them.

PATIENT DAY - A unit of measure denoting 24-hour lodging provided and services rendered to one inpatient between the census taking hour (usually midnight) or two successive days.

PATIENT ORIGIN STUDY - A study to determine the geographic distribution of homes of patients served by one or more health services.

PATIENT TRANSFER GUIDE- Published material describing the features of facilities to which a physician may want to transfer a patient.

PEER REVIEW - The evaluation by practicing physicians or other health professionals of the effectiveness and efficiency of services ordered or performed by other members of their professional category (peers). It sometimes refers to the activities of Professional Standards Review Organizations and utilization reviews.

PER DIEM COST - The cost incurred by an institution for a day of care for one patient.

PHYSICS - A science that deals with matter and energy and their interactions in the fields of mechanics, acoustics, optics, heat, electricity, magnetism, radiation, atomic structure, and nuclear phenomena.

P.L. 93-641 - The numberical designation given to the National Health Planning and Resources Development Act of 1974.

PNEUMOENCEPHALOGRAPHY - A diagnostic procedure in which air is injected into the spinal column and then moves up into the ventricles of the brain where it can be seen on conventional X-ray. These distortions in the ventricular space indicate space-filling lesion in the brain.

POLICY - A definite course or method of action by which to make present and future decisions.

POVERTY AREA - A geographic area with a large number of low income families.

PREINFARCTION ANGINA - Pain in muscle tissue caused by an interrupted blood supply due to tissue.

PRELIMINARY STATE HEALTH PLAN - The draft **State Health Plan** submitted to the **SHCC** by the **SHPDA**. This draft may contain recommendations by the **SHPDA** to modify **HSPs**.

PREPAYMENT - Advance payment for health services, as in health maintenance organizations.

PREVALANCE - The number of cases of disease extant at a particular time in relation to the size of the population.

PREVENTIVE MEDICINE - Health services (such as immunization programs or early detection of disease) intended to prevent the occurrence of health problems.

PRIMARY CARE - See the Primary Care Section of the Health Systems Plan.

PRIMARY TRANSPORTATION - An organized rapid response system of emergency vehicles which provide transport of emergency personnel and patients from the emergency scene to appropriate medical facilities.

PRIORITY - A preferential rating given to one of a number of competing persons or things.

PROFESSIONAL STANDARDS REVIEW ORGANIZATION (PSRO) - A physician sponsored organization operating with authority of the Social Security Amendments of 1972, P.L. 92-603, charged with comprehensive and ongoing review of services provided under Medicare, Medicaid, and Maternal and Child Health Programs, to determine whether services are medically necessary, provided in accordance with professional criteria, norms and standards and rendered in the apropriate setting. The PSRO in Montana is The Montana Foundation for Medical Care.

PRO FORMA - Fiscal standards which embody forecasts of all assets and liabilities as well as income statement items.

PROGRAM - A set of related organizations, resources, and/or actions directed to the accomplishment of a defined set of objectives for a specified target population or geographic area.

PROJECT REVIEW - Review and comment functions carried out by Health Systems Agencies in accordance with Montana Certificate of Need Laws, Section 1122 of the Social Security Act, and New Institutional Health Services.

PROPRIETARY - A descriptive term for health care institutions operated on a "for profit" basis.

PROSPECTIVE REIMBURSEMENT - Any method of paying hospitals in which amounts or rates of payment are established in advance for the coming year and the hospitels are paid these amounts regardless of the costs they actually incur.

PROVIDER - An individual or organization whose responsibility involve the provision, administration, teaching, or development of health services, activities, or supplies. The provider may have a direct or indirect interest in the health industry.

PSYCHIATRIC HOSPITAL - A health institution, licensed by the State Health Department, which is planned, organized, operated and maintained to offer facilities, beds, and services over a continuous period exceeding twenty-four (24) hours to individuals requiring early diagnosis, intensive and continued clinical therapy for mental illness and rehabilitation. Integrated therapeutic programs are provided within such institutions.

PUBLIC ACCOUNTABILITY - The responsibility owed to the general public by organizations, institutions and agencies, manifested in public meetings, open records, conflict of interest declarations, etc.

PUBLIC HEALTH - The field concerned with the protection and improvement of community health by organized community efforts.

PUBLIC HEARING - A public meeting considering a specific issue and allowing for a decision considering all available information and viewpoints.

PUBLIC REGIONAL PLANNING COMMISSION - See Council of Governments.

PUBLIC SAFETY AGENCIES - Law enforcement, fire protection, search and rescue, and other agencies whose purpose is to insure the safety and well-being of the citizenry.

QUALITY - Quality refers to the degree to which health care services are delivered in accordance with established professional standards in terms of structure, process and outcome. Structure measures the physical facilities, staff qualifications and organization of service; process measures the appropriateness and professional adequacy of services; and outcome measures the results of services in terms of the patient's health condition.

Quality is frequently described as having three aspects: 1) quality of input resources (i.e., certification and/or training of providers); 2) quality of the process of service delivery, (i.e., use of appropriate procedures for a given condition); 3) and quality of the outcome of service use (i.e., actual improvement in condition or lack of harmful effects).

QUICK RESPONSE UNITS (QRUs) - A group of individuals trained and equipped to provide Basic Life Support. Generally located in areas where ambulance response times arelong because of the distance involved, the nontransport QRUs are dispatched at the same time as an ambulance and provide emergency care until the ambulance arrives.

RADIOBIOASSAY - Determination of the active power of a sample of radiation by noting its effect on animals or humans as compared with the effect of a standard preparation.

REGIONAL MEDICAL PROGRAMS (RMP) - Previous agencies established to plan for and stimulate the development of health delivery programs to satisfy the needs of the region they served (functions now transferred to MHSA and MMERF).

REGIONAL OFFICE - One of ten decentralized offices of the United States Department of Health, Education and Welfare which conducts the business of that department for a specific group of states.

REHABILITATION - Preparing a person to function within the limits of his original or residual disability by the acquisition, return, or accommodation to loss of skills or knowledge.

REHABILITATION FACILITY - A center providing vocational, social, medical, and educational services to overcome impairments due to disease or injury.

REIMBURSEMENT - Payment for services rendered.

RESIDENTIAL CARE - Diagnosis, care, and treatment of alcoholicsin small group homes.

RETROSPECTIVE REIMBURSEMENT - Payment to health care providers by a third party carrier for costs or charges incurred by its subscribers in a previous time period.

REVENUE SHARING - A federal program redistributing tax monies to local governments for the purpose of meeting specific problems including health, environment, public safety, transportation and recreation.

REVIEW & COMMENT - The process of analyzing and making recommendations regarding an applicant's proposal. Reviews are conducted by the Subarea Council, Project Review Committee and Executive Committee of the MHSA.

SANITARY CHEMISTRY - The chemistry dealing with the establishment of environmental conditions favorable to health.

SCREENING - A series of tests to identify individuals with a disease or risk of disease.

SECONDARY CARE - Health care services which are generally needed less frequently, such as short-term hospital services, nursing home care, and the more highly specialized consultant services.

SECONDARY TRANSPORTATION - An organized system of emergency vehicles which provide transport of patients and medical personnel (after the patient's condition has been stabilized) to critical care centers.

SECTION 1122 - That section of the Social Security Act pertaining to changes in facilities or services as they relate to payments from Medicare and Medicaid, Title XI of P.L. 92-603.

SEPSIS - The presence in the blood or other tissues of pathogenic microorganisms or their toxins.

SEROLOGY - The science dealing with serums (the watery portion of an animal fluid remaining after coagulation), and especially with their reactions.

SERVICE AREA - The geographic region from which a particular program or facility draws the majority of its users; also known as medical trade area.

SHARED SERVICES - The coordinated or otherwise explicity agreed upon sharing of responsibility for provisor of medical or nonmedical services on the part of two or more otherwise independent health care facilities or programs.

SITE - The land proposed for construction of a health care facility and any building thereon included in the purchase cost, whether such building is to be used in the construction, or is to be razed.

SKILLED NURSING FACILITY (SNF) - A health institution, licensed by the State Health Department, which is planned, organized, operated and maintained to provide facilities and health services with related social care to inpatients who require regular medical care and 24-hour nursing services for illness, injury or disability.

SLIDING FEE SCHEDULE - A fee schedule under which the fee charged a patient for services varies with his ability to pay, however this ability is determined.

SOCIAL SERVICES - Programs provided by trained personnel to enable a patient, family members or others to deal with the problems affecting the patient's social function and well being.

SOLO PRACTICE - The operation of a private practice by one health professional.

SPECIALIST - A health professional who limits his practice to a specific area of competence, usually based on specialized training and recognized by a specialty board.

STAFF - Refers to all employees of a facility or organization. The term may also be used to refer to a specific sub-group such as medical staff or nursing staff.

STANDARD - A generally accepted measure of quality.

STANDARD METROPOLITAN STATISTICAL AREA (SMSA) - U.S. census term referring to specific areas based on population, metropolitan character, and integration criteria. Great Falls and Billings metropolitan areas are only areas in Montana currently qualified as SMSA's.

START-UP COSTS - The initial implementation costs incurred by a program before it begins to generate its own revenue.

STATE ADMINISTRATIVE PROGRAM (SAP) - The State agency program specifying performance within the state for components of P.L. 93-641.

STATE HEALTH PLAN (SHP) - The State's health plan made up of HSPs from each Health Systems Agency as well as modifications suggested by the SHPDA and plans for state-provided services which are also developed by the SHPDA. The final approval of the SHP rests with the SHCC.

STATE HEALTH PLANNING AND DEVELOPMENT AGENCY (SHPDA) OR (SA) - The agency of state government, selected by the Governor and approved by the Secretary of the Department of Health, Education and Welfare, which assumes responsibility for health planning for state government and coordination of health plans developed by each Health Systems Agency within its jurisdiction. The SHPDA in Montana is the Health Planning and Resource Development Bureau, Hospital & Medical Facilities Division of the State Department of Health and Environmental Sciences.

STATE MEDICAL FACILITIES PLAN (SMFP) - The state's program to identify projects and their relative need for assistance under Title XVI of the Public Health Service Act for modernization, construction or conversion of facilities.

STATEWIDE EMS SYSTEM - A network of regional EMS systems, coordinated and integrated at the state level.

STATEWIDE HEALTH COORDINATING COUNCIL (SHCC) - A statewide body composed of the Health Systems Agency as well as other members appointed by the Governor. Among other things, the SHCC approves and adopts State Health Plans and State Medical Facilities Plans.

STIMULANTS - A family of drugs which directly stimulate the central nervous system. The most widely known stimulant is caffeine. The most commonly abused stimulants are amphetamines.

SUBAREA ADVISORY COUNCILS - Advisory bodies serving areas within a Health Service Area. These councils may advise the Governing Body of an HSA with respect to the performance of its mandated functions.

SUBSTANTIAL CHANGE IN SERVICE - Substantial changes in services include:

1. The addition of any new clinically related (i.e., diagnostic, curative, or rehabilitative) service to be offered or department to be added;
2. The termination of a clinically related service or department which had previously been provided;
3. Any change in the scope or type of an existing service or department, or in the capability for providing such service;
4. The conversion from one type of health facility to another, including the conversion from one level of care to another in a nursing home.

SUPPORTIVE CARE - Measures taken to maintain vital body functions.

SURGICALS - Examinations of tissues removed during surgery.

SURGICENTER - A facility which serves outpatients requiring surgical treatment exceeding the capacity of the physician's office but not requiring hospitalization as an inpatient.

SYPHILIS SEROLOGY - Examinations of serums for the contagious venereal disease, syphilis.

SYSTEMS ANALYSIS - The construction of models to simulate real life and thus make possible tests of effects produced by alterations in constraints or variables which could not be tested in the real world.

TARGET POPULATION - The population group or subgroup toward which services are directed.

TASK FORCE - A group of persons charged with investigating a particular problem and formulating proposals for its solution.

TELEMETRY - The use of radio channels for transmitting patient vital signs.

TERTIARY CARE - The most highly developed and specialized health care services; medical subspecialities offered in a limited number of sophisticated facilities.

THIRD PARTY PAYER - A private organization or government agency that pays for the health services of recipients.

TITLE V OF THE SOCIAL SECURITY ACT - Authorizes payments for maternal and child health services.

TITLE XIII OF THE PUBLIC HEALTH SERVICE ACT - The Health Maintenance Organization Act of 1973 (P.L. 93-222).

TITLE XV OF THE PUBLIC HEALTH SERVICE ACT - That amendment to the Public Health Service Act dealing with National Health Planning and Development.

TITLE XVI OF THE PUBLIC HEALTH SERVICE ACT - That amendment to the Public Health Service Act dealing with Health Resources Development.

TITLE XVIII OF THE SOCIAL SECURITY ACT - Authorizes payments for the Medicare Program.

TITLE XIX OF THE SOCIAL SECURITY ACT - Authorizes payments for the Medicaid Program.

TOXICOLOGY - The sum of what is known regarding poisons; the scientific study of poisons, their actions, their detection, and the treatment of the condition produced by them.

TRANQUILIZERS - A family of drugs generally used to counteract tension and anxiety without significantly impairing mental and physical functions.

TRANSFER AGREEMENTS - Written agreements between facilities which specify availability and payment arangements.

TRAUMA - An acute injury or wound, such as head injuries, gunshot wounds, motor vehicle accidents, etc.

TRIAGE - The classification of the ill or injured to determine priority of need and appropriate care or treatment.

UNIFORM COST ACCOUNTING - The use of a common set of accounting definitions, procedures, terms and methods for the accumulation and communication of data relating to the financial activities of an organization.

UTILIZATION - Patterns or rates of use of health care services.

UTILIZATION REVIEW (UR) - Evaluation of the necessity, appropriateness and efficiency of medical services, procedures and facilities.

VARIABLE COSTS - Costs which generally increase or decrease as utilization fluctuates.

VENTRICULAR ARRHYTHMIA - Variation in normal rhythm of the heartbeat.

VERTICAL CATEGORIZATION - A classification of hospital capability according to specialty care resources.

VIROLOGY - A branch of microbiology concerned with viruses and virus diseases.

VITAL STATISTICS - Statistical data reporting health, disease, deaths, births, and marriages.

WORKING CAPITAL - The sum of an institution's investment in short-term or current assets.

WORK PROGRAM - A plan of action or schedule for task completion.

APPENDIX 5
THE HEALTH PLANNING AND DEVELOPMENT PROCESS

In revising the 1979 Health Systems Plan, three public hearings were conducted in each of the five Montana Health Systems Agency subareas. The subareas reviewed and commented on the tertiary, secondary, primary, pre-care and preventive health service components. The health status components were reviewed by the subareas and emphasized as components providing a potential for next year's Annual Implementation Plan projects.

The components addressed in the 1980 Health Systems Plan differ somewhat from those contained in the 1979 Health Systems Plan. A new plan component, Comprehensive Rehabilitation Programs, was reviewed by all five subareas and adopted by the Governing Board for its incorporation into the 1980 HSP. The plan components on Alcohol Services and Drug Services were combined into one plan component entitled Alcohol and Drug Abuse Services. Similarly, the plan component addressing Critical Care (ICU/CCU) Beds was incorporated into the General Hospital Acute Inpatient Care component. Both the Alcohol and Drug Abuse Services and Mental Health Services plan components were revised to address and remain consistent with the State Plans generated by the Department of Institutions through the Alcohol and Drug Abuse Division and the Mental Health and Residential Services Division, respectively.

Three plan components were deleted from the 1980 HSP, Poison Control Services, Burn Care Services, and Blood Banking and Processing Services. These components had not been utilized for any reviews and their influence on the development of services was minimal.

Figure 1 illustrates the general process used in developing all new components in the Montana Health Systems Plan. This process was jointly developed by the MHSA and the State Health Planning and Development Agency (SHPDA). It was submitted to, and adopted by, the MHSA Governing Board on November 5, 1976. Task forces were incorporated into the planning process by the MHSA Executive Committee during its June 2, 1978 meeting.

In developing the plan, each component, or set of service guidelines, goes through the following steps:

1. After the subject has been identified, the MHSA staff convenes a task force (made up of Subarea Advisory Council members, selected providers and other interested persons) to advise the staff on the areas to be highlighted, general themes to be presented, and criteria to be used.
2. The planning staff of the Montana Health Systems Agency prepared initial drafts of each component. Each component was written in accordance with the outline presented in Figure 2. This draft was submitted to task force members for their comments and criticisms. If controversial issues were identified, the staffconsulted with the task force on how these should be addressed in the rewrite.
3. The draft was written and prepared for general distribution. Figure 3 identifies the number of people to whom copies were sent. At the same time, notices of the public hearing(s) were sent to at least one major newspaper in the subareas. The hearing(s) were held at least 30 days after this mailing. In accordance with P.L. 96-79, copies were sent to the following agencies for their review and comment:
   - Office of Budget and Program Planning (the State A-95 Agency)
   - Medical Assistance Bureau, Department of Social and Rehabilitation Services (Medicaid)
   - Montana Hospital Rate Review Commission
   - Montana Foundation for Medical Care (PSRO)
   - Montana Medical Education and Research Foundation
   - Montana Hospital Association and its District Chairmen
   - Montana Medical Association and its Local Presidents
   - Montana Nurses Association and its District Presidents, and
   - Montana Nursing Home Association.

   Both written and oral comments were solicited.
4. The procedures used in each of the hearings are presented in Figure 4.

   For the third HSP, three public hearings were held in each MHSA subarea for:
   - Chapter 3 - the Tertiary Care components were reviewed during the month of August, 1979.
   - Chapter 4 - the Secondary Care components were reviewed in September, 1979.
   - Chapters 5, 6, 7 - the Primary Health Services, Pre-Care and Preventive Health Services, and the Health Status Characteristics were reviewed by the subareas in October, 1979.
5. After each of the hearing(s), the Plan Development Committee met to instruct the staff on revisions to be made.
6. The staff rewrote the draft and disseminate it to commentors and members of the MHSA Plan Development Committee. In the next committee meetings, the draft was refined (if necessary) and approved for consideration by the MHSA Governing Board.
7. At the next meeting of the Governing Board, the drafts were presented for its approval.

The 1980 Montana Health Systems Plan was submitted to, and approved by, the MHSA Governing Board at its November 2, 1979 meeting.

8. Once the HSP is printed, it will be given general distribution. This will include 20 copies sent to the State Library for distribution to libraries around the state.

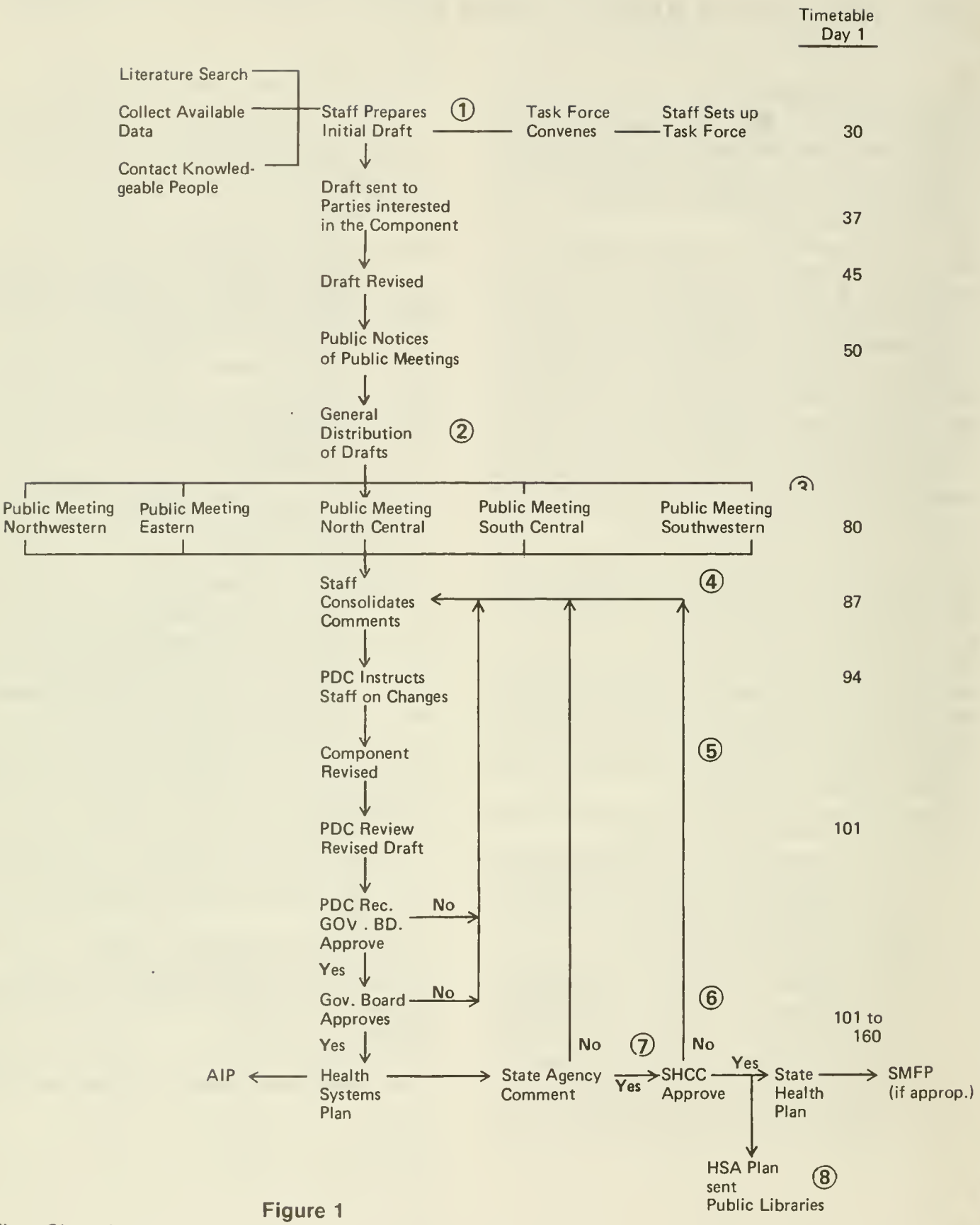


Figure 1
Flow Chart for the Health Systems Plan Development Process

- **Summary**
- **Goals, Objectives and Recommended Actions**
- **Recommended Review Criteria** (when appropriate)
  - identifies criteria in terms of cost, accessability, quality, acceptability, availability and continuity considerations

1.0 **Background** - defines the subject being addressed, identifies the scope and limitations of the component, and discusses national trends.

2.0 **Description of the Current Situation**

2.1 **Incidence Prevalence and Mortality** - presents Montana health status indicators if appropriate and available.

2.2 **Current Inventory and Utilization Levels** - describes where services are found, their utilization levels and analyzes performance (where possible); identifies problems and gaps in the service.

3.0 **Plan for the Future**

3.1 **Overview** - discuss the overall strategy for future development of the service.

3.2 **Estimated Need** - estimates utilization levels and need for future services.

4.0 **Justification for Exceptions to the National Guidelines** - where applicable presents a detailed analysis for exceptions to the National Guidelines.

References

Figure 2
New Format For Writing HSP Component

- Subarea Committee Members (103)
- Hospitals (61)
- Presidents of Local Medical Societies (14)
- Nurse District Presidents (20)
- HSA Plan Development Committee Members (9 and 10)
- A-95 Clearinghouse (1)
- SHPDA Staff (3)
- Social Rehabilitation Service (2)
- Hospital Rate Review Commission (1)
- Montana Foundation for Medical Care - PSRO (3)
- Montana Hospital Association (1)
- Montana Medical Association (2)
- Montana Nurses Association (2)
- Montana Nursing Home Association (1)
- Denver Regional Office (1)

Depending on the subject addressed, copies of components were sent to the following:

- *Long Term Facilities (91)*
- *Health Departments (approx. 30)*
- *Home Health Agencies (18)*

Figure 3
General Distribution of Initial Draft Components

APPENDIX 6
MHSA COMMITTEES INVOLVED IN DEVELOPING THE HEALTH SYSTEMS PLAN

MHSA COMMITTEE MEMBERSHIP

PLAN DEVELOPMENT COMMITTEE
NW Phil Catalfomo, CHAIRMAN
SW John Allen
NC Sharon Dieziger
SW Michael Donovan
NW Clyde Dowell
NC Walter Foster
SC Guy Glenn, M.D.
E Gloria Heggen
SW Sister Mary Clarice Lousberg
SC John Manley
NC Mary Ellen Robinson

BY-LAWS COMMITTEE
SC Gary Dols, CHAIRMAN
SW Margaret Drummond
NC Charles Fisher
NC Al Klingler

SUBAREA ADVISORY COMMITTEE
SW Leo Black, CHAIRMAN
NW Dick Atkins
E Robert Bell
NW Jack B. Dodd
NC Al Klingler
SC Betty Mitchell
NC Karen Sloan

INTERNAL MANAGEMENT COMMITTEE
SW John Bunger, CHAIRMAN
SW Vincent Amicucci, M.D.
SW Robert Marks
SW Kathleen Ramey
SW Gary Watt

APPROPRIATENESS REVIEW COMMITTEE
NC Ray Amundson, CHAIRMAN
NW Jack B. Dodd
NW Kent Ferguson
SC Gary Fletcher
NW Evelyn Johnson
SC Edward Morse
SC Barbara Schilling
SC Jan Treml
SW Gary Watt
E Ada Weeding
E Malcolm Winter, M.D.

EXECUTIVE COMMITTEE
SC Bryce Hughett, M.D., CHAIRMAN
SW John Allen
SW Vincent Amicucci, M.D.
E Robert Bell
SW John Bunger
NW Phil Catalfomo
NC Sharon Dieziger
NW Jack B. Dodd
NW Clyde Dowell
SW Margaret Drummond
NW Kent Ferguson
NC Charles Fisher
E Gloria Heggen
NW C.G. Pat McCarthy, M.D.
SC Ed Morse
SW Kathleen Ramey
E Vern Reed
NC Mary Ellen Robinson

THE STAFF

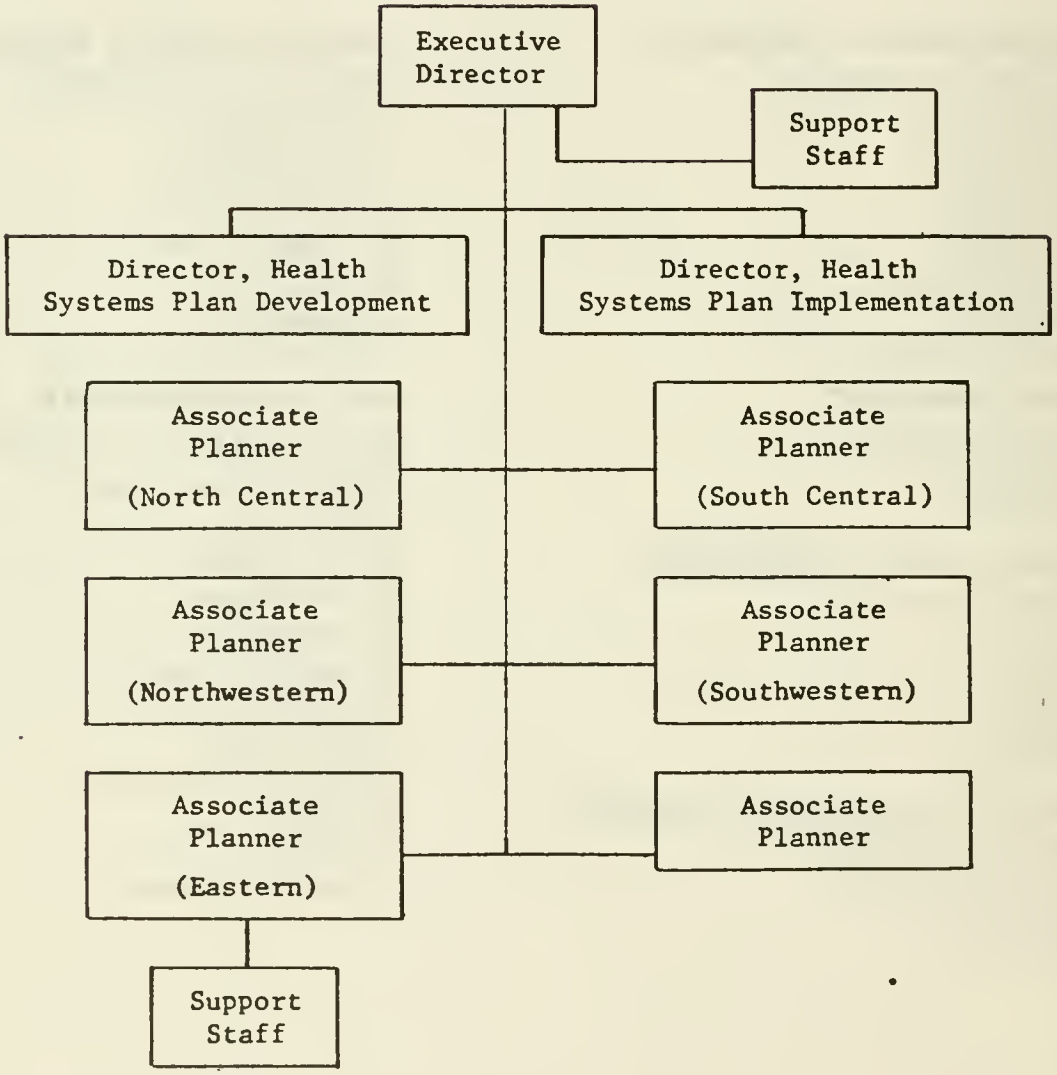
The Executive Director
Ralph Gildroy

Director, Health Plan Development
Robert Liffring

Associate Planners
Vearle Addy
Gregg Davis
Howard Kennedy
Barbara Kirscher
Michael Welsh
Dan Yazak

Director, Health Plan Implementation
Bert Glueckert

Support Staff
Gerri Reeves
Sharon Workman
Patricia Garvin
Myrna Reed



GOVERNING BOARD

Last Year of Term

John Allen — at Governor's Pleasure
1140 Vallejo
Helena, MT 59601
449-3420/458-9743
Governor's Representative, Consumer, Southwestern, Area 4

Vincent Amicucci, M.D. — 1980
2225 11th Avenue
Helena, MT 59601
442-4315/933-5527
Physician, Provider, Southwestern, Area 4

Ray Amundson — 1979
1827 Beech Drive
Great Falls, MT 59401
761-3150
Consumer, North Central, Area 2

Jane Anderson — 1981
115 East Pennsylvania Avenue
Anaconda, MT 59711
563-3110
Consumer, Southwestern, Area 4

Robert Bell, DVM — 1981
515 Broadway
Culbertson, MT 59218
787-6682
Consumer, Eastern, Area 1

John Bunger, Director — at Director's Pleasure
Veterans Administration Center
Fort Harrison, MT 59636
442-6410
V.A. Representative, Provider, Southwestern, Area 4

Phil Catalfomo — 1980
33 Willowbrook Lane
Missoula, MT 59801
728-5411/243-4621
Professional Schools, Provider, Northwestern, Area 5

Sharon Dieziger — 1979
3604 Fifth Avenue South
Great Falls, MT 59401
761-1200 ext. 2330/453-1525
Montana Nurses Assoc., Provider, North Central, Area 2

Jack B. Dodd — 1979
P.O. Box 816
Whitefish, MT 59937
862-2819
Consumer, Northwestern, Area 5

Gary Dols — 1979
1120 Broadwater Avenue
Billings, MT 59101
259-1757/252-3275
Chiropractor, Provider, South Central, Area 3

Last Year of Term

Michael Donovan — 1979
Montana Physicians' Service
404 Fuller Avenue
Helena, MT 59601
442-5450 ext. 200
Blue Shield, Provider, Southwestern, Area 4

Clyde Dowell — 1981
P.O. Box 435
Eureka, MT 59917
296-2775
Consumer, Northwestern, Area 5

Margaret Drummond — 1979
515 North Tenth
Bozeman, MT 59715
586-9165
Consumer, Southwestern, Area 4

Kent Ferguson, Administrator — 1980
Hot Springs Convalescent Center
Drawer U
Hot Springs, MT 59845
741-2992
Nursing Home Assoc., Provider, Northwestern, Area 5

Charles Fisher — 1981
Montana United Indian Association
P.O. Box 26
Babb, MT 59411
732-4031
Montana United Indian Assoc., Consumer, North Central, Area 2

Gary Fletcher, Administrator — 1980
Central Montana Hospital
408 Wendell
Lewistown, MT 59457
538-7711
Hospital Administrator, Provider, South Central, Area 3

Walter Foster — 1981
P.O. Box 274
Carter, MT 59420
734-5341
Low Income, Consumer, North Central, Area 2

Guy C. Glenn, M.D. — 1980
P.O. Box 2505
Billings, MT 59103
656-0769/657-7148
Physician, Provider, South Central, Area 3

Gloria Heggen — 1980
P.O. Box 457
Ekalaka, MT 59324
775-6259
Consumer, Eastern, Area 1

Last Year of Term

Bryce Hughett, M.D. — 1979
Mental Health Center
1245 North 29th
Billings, MT 59101
252-5658/248-6001
Mental Health, Provider, South Central, Area 3

Evelyn Johnson — 1980
430 South Fifth Street West
Missoula, MT 59801
543-6737
Consumer, Northwestern, Area 5

Robert Jorgenson — 1981
1108 Second Street West
Roundup, MT 59072
323-1104
Elected Official, Consumer, South Central, Area 3

Al Kautz — 1979
1212 Grand Avenue
Billings, MT 59101
248-1676
Optometrist, Provider, South Central, Area 3

Al Klingler — 1980
P.O. Box 488
Shelby, MT 59474
434-2692/434-2252
Consumer, North Central, Area 2

Neil Livingstone, D.D.S. — 1981
820 North Montana Avenue
Helena, MT 59601
442-7530
Dentist, Provider, Southwestern, Area 4

John Manley — 1979
P.O. Box 2539
Billings, MT 59103
252-7146/656-5825
Consumer, South Central, Area 3

Bob Marks — 1980
P.O. Box 116
Clancy, MT 59634
933-5589
Consumer, Southwestern, Area 4

C.G. Pat McCarthy, M.D. — 1981
501 West Broadway
Missoula, MT 59801
543-6831/549-6181
Physician, Provider, Northwestern, Area 5

John Loren Mitchell — 1980
Rocky Boy Route
Box Elder, MT 59521
Billings Area Indian Health Board, Consumer,
North Central, Area 2

Edward Morse — 1981
Denton, MT 59430
567-2304
Consumer, South Central, Area 3

Leon C. Odegaard — 1979
Route 5, Yellowstone Trail Road
Billings, MT 59101
259-2390
Pharmacist, Provider, South Central, Area 3

Last Year of Term

Kathleen Ramey — 1980
1511½ Railroad Avenue
Helena, MT 59601
442-9920/442-2817
Elected Official, Consumer, Southwestern,
Area 4

Vern Reed, Administrator — 1981
Richland Homes & Sidney Community Hospital
P.O. Box 671
Sidney, MT 59270
482-2120
Hospital Administrator, Provider, Eastern, Area 1

Mary Alice Rehbein — 1980
Richland County Public Health
221 Fifth Street SW
Sidney, MT 59270
482-2207
League for Nursing, Provider, Eastern, Area 1

Mary Ellen Robinson — 1981
Highwood, MT 59450
733-5161
Consumer, North Central, Area 2

Verneva Salisbury — 1981
Floweree, MT 59440
734-5383
Senior Citizens, Consumer, North Central, Area 2

Barbara Schilling — 1980
P.O. Box 26
McLeod, MT 59052
932-2805/932-2396
Consumer, South Central, Area 3

Sister Mary Clarice Lousberg, Administrator — 1979
St. James Community Hospital
400 South Clark Street
Butte, MT 59701
792-8361
Hospital Administrator, Provider, Southwestern,
Area 4

Jan Treml — 1980
620 Alderson Avenue
Billings, MT 59101
252-5181 ext. 221
Home Health, Provider, South Central, Area 3

Gary Watt — 1979
1515 Missoula Avenue
Helena, MT 59601
449-2501/443-4753
Environmental, Allied Health, Southwestern, Area 4

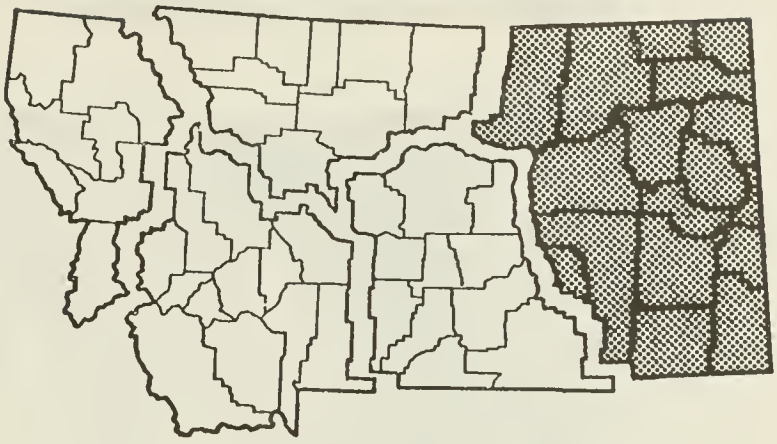
Ada Weeding — 1982
Jordan, MT 59337
557-2557
Consumer, Eastern, Area 1

David Wilkins, M.D. — 1981
Route 36, Box 85-C
Havre, MT 59501
265-7955
Physician, Provider, North Central, Area 2

Malcolm Winter, M.D. — 1979
1817 Bridge
Miles City, MT 59301
232-0790/232-4847
Physician, Provider, Eastern, Area 1

EASTERN MONTANA

Subarea Advisory Council Members



CONSUMERS

Bertha Baxter
Route 1, Box 178
Fairview, Montana 59221
747-5542

Robert Bell, D.V.M.
515 Broadway
Culbertson, Montana 59218
787-6682

Tom Eggensperger
Box 1183
Baker, Montana 59313
778-3603

Jim Hoffman, President
Dawson College
310 Dilworth
Glendive, Montana 59330
365-3396

Jean Hough
Broadus, Montana 59317
436-2576

Vi Irion
Box 246
Fallon, Montana 59326
486-5765

Betty Kasten
Brockway, Montana 59214
458-2372

Shari Marks
Box 56
Hysham, Montana 59038
342-5467

Leonard Meidinger
Terry, Montana 59349
637-5767

Joe Murphy
309 North Jackson
Plentywood, Montana 59254
765-1966

Vincent Nelson
Box 749
Malta, Montana 59538
654-2447

George Nicholas
109 Sioux
Fort Peck, Montana 59223
526-3212

Eldon Rice
Old Hospital Building
Forsyth, Montana 59327
356-7551

Veronica Richards
Hammond, Montana 59332
775-6667

Nelson Smith
712 Garland
Miles City, Montana 59301
232-2890

Lyder Tande
108 Park
Scobey, Montana 59263
487-2259

Ada Weeding
Jordan, Montana 59337
557-2557

Marlene Welliever
Wibaux, Montana 59353
795-2381

PROVIDERS

James R. Carlson, Admin.
Custer County Rest Home
Box 130
Miles City, Montana 59301
232-1035

Erik Deeter
Box 508
Colstrip, Montana 59323
748-3600

Judy Gilman, RN
115 Johnson Street
Wolf Point, Montana 59201
653-2150

David Hide, M.D.
640 Seventh Avenue North
Glasgow, Montana 59230
228-2605

Kyle Hopstad, Administrator
Frances Mahon Deaconess Hosp.
Box 928
Glasgow, Montana 59230
228-4351

Shirley Lenhart, RN
Box 1225
Glendive, Montana 59330
365-2935

Roman Losleben, Jr.
P.O. Box X
Malta, Montana 59538
654-2632

Charles Parke, D.O.
Garberson Clinic
Miles City, Montana 59301
232-6461

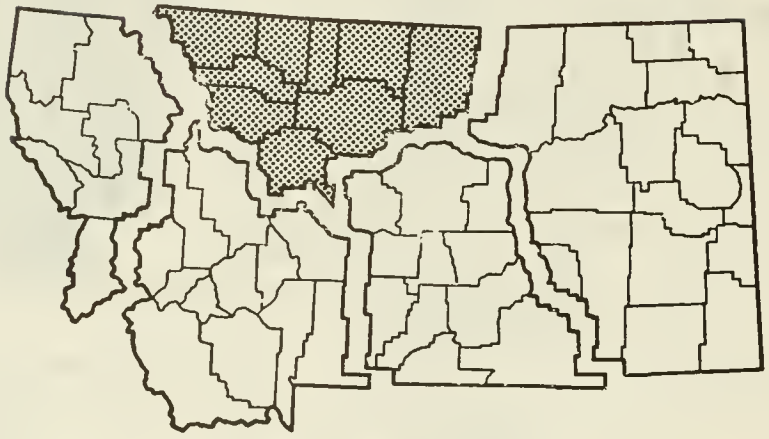
Avis Peterson, RN
113 Tenth Avenue SW
Sidney, Montana 59270
482-2868

Wilson J. Schuerholz, Director
V A Hospital
210 South Winchester Avenue
Miles City, Montana 59301
232-3060

Carl Totman, OD
P.O. Box 477
Malta, Montana 59538
654-1002

NORTH CENTRAL MONTANA

Subarea Advisory Council Members



CONSUMERS

Rev. Paul Cousins
113 Fourth Avenue SW
Conrad, Montana 59425
278-5370

Larry Epstein
114 Fifth Street SW
Cut Bank, Montana 59427
873-5642

Ella Mae Howard
1904 Fourth Street NW
Great Falls, Montana 59405
727-2682

Helen Lauener
O'Haire Apts., No. 1
Shelby, Montana 59474
434-2527

Ms. Janet Martin
P.O. Box 108
Belt, Montana 59412
277-3815

Mrs. Judith Peterson
P.O. Box 127
Chinook, Montana 59523
357-3139/357-3350

Mary Ellen Robinson, **Secretary**
Highwood, Montana 59452
733-5161

Randy Smith
1176 17th Street
Havre, Montana 59501
265-6209

CONSUMERS

Robert Swortzel
P.O. Box 124
Choteau, Montana 59422
466-2886

Delmar Wolfe
P.O. Box 481
Chester, Montana 59522
456-3213

PROVIDERS

Hugh V. Anderson, M.D.
2517 Seventh Avenue South
Great Falls, Montana 59405
452-0558/452-9546

Ben P. Broderick, **Program Review Chairman**
15th Avenue & 32nd Street
Great Falls, Montana 59405
453-2701/761-4300

Peter M. Frazier
2222 Seventh Avenue South
Great Falls, Montana 59405
761-3808/761-6700

James M. Holcomb, **Plan Dev. Chairman**
111 East Granite
Shelby, Montana 59474
434-2532/434-5536

Gary Myllymaki
Route 1, Box 236-G
Great Falls, Montana 59401
727-5157/727-3300

PROVIDERS

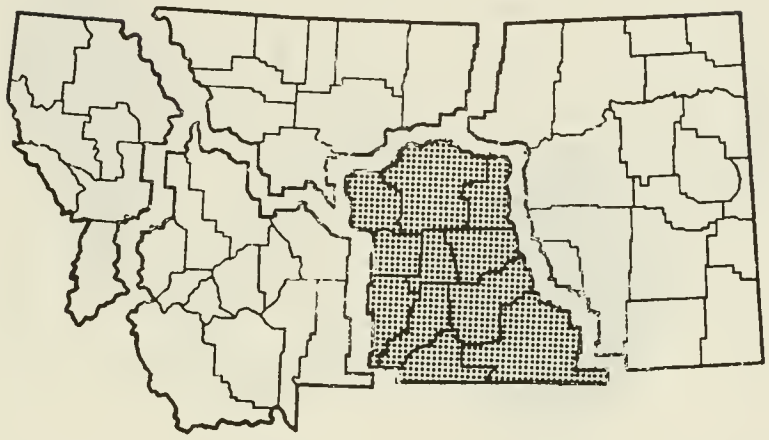
Robert F. Morgan, M.D.
P.O. Box 878
Conrad, Montana 59425
278-5277

Elmer Richey, **Vice Chairman**
3037 Delmar
Great Falls, Montana 59404
761-3052/761-2200

Ms. Karen S. Sloan, **Chairman**
216 Ninth Street
Havre, Montana 59501
265-6091/265-2211

SOUTH CENTRAL MONTANA

Subarea Advisory Council Members



CONSUMERS

Margaret Eklund
Ryegate, Montana 59074
568-2510

Bob Evertz
Joliet, Montana 59041
962-3368

Pat Lengemann
Winnett, Montana 59087
429-5211

Grace Leuthold
Molt, Montana 59057
669-2544

Betty Mitchell
1902 St. John Avenue
Billings, Montana 59102
656-6179

Edward Morse
Denton, Montana 59430
567-2304

Marietta Peterson
Box 8
Judith Gap, Montana 59453
374-2244

Jackie Redding
Big Horn, Montana 59010
342-5481

Mary Reilly
Box 112, Route 2
Stanford, Montana 59479
566-2636

Barbara Schilling
P.O. Box 26
McLeod, Montana 59052
932-2805

Betty Stockert
202½ Main
Roundup, Montana 59072
323-1320

PROVIDERS

Elizabeth Clagett
Central Montana Hospital
408 Wendell Avenue
Lewistown, Montana 59457
538-7711

Jean Gowdy
Pryor Star Route
Billings, Montana 59101
259-0495

Jan Johnson, **Chairman**
Montana Wyoming Health
Services
Midland National Bank Building
Room 404
Billings, Montana 59101
657-4270

Steve Kramer, M.D.
P.O. Box 2555
Billings, Montana 59101
252-4141

Hollis K. Lefever, M.D.
119 East Main
Lewistown, Montana 59457
538-3404

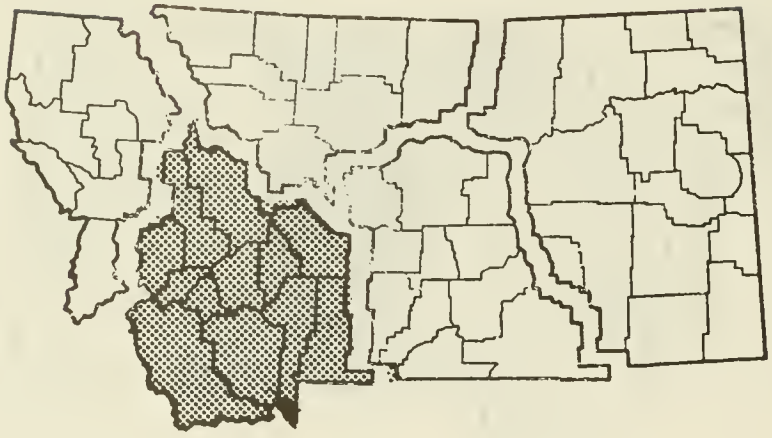
Sister Michel Patenburg, Admin.
St. Vincent Hospital
P.O. Box 2505
Billings, Montana 59103
657-7000

PROVIDERS

Mark Robinson, Admin.
Stillwater Convalescent Center
350 West Pike Avenue
Columbus, Montana 59019
322-5342

Janice Treml
620 Alderson Avenue
Billings, Montana 59101
252-5151 ext. 221

SOUTHWESTERN MONTANA
Subarea Advisory Council Members



CONSUMERS

Leo Black
Ennis, Montana 59729
682-4467

Les Brooks
90 North Hoffman
Belgrade, Montana 59714
388-4076/994-4421

Judy Doggett
Broadwater County Courthouse
Townsend, Montana 59644
266-5209

Dee Ann Durgan
Hoffman Route
Livingston, Montana 59047
222-0338

Virginia Gehrett
830 Missouri
Deer Lodge, Montana 59722
846-2424

Gerry Halstead
P.O. Box 608
Anaconda, Montana 59711
563-7619

Lucile Logan
P.O. Box 414
White Sulphur Springs, Montana
59645
547-3951

Bob Marks
P.O. Box 116
Clancy, Montana 59634
933-5589

Dolly Page
Philipsburg, Montana 59858
859-3516

CONSUMERS

Henry Stish
414 South Arizona
Dillon, Montana 59725
683-7382

Roger Tippy
P.O. Box 475
Helena, Montana 59601
442-4451

John Tomich, Jr.
2245 Skyway Avenue
Butte, Montana 59701
723-3885

PROVIDERS

John Bunger, Director
V A Hospital
Fort Harrison, Montana 59636
442-6410

Tim Casey
115 W. Commercial Avenue
Anaconda, Montana 59711
563-2129/563-3155

Marlene Durland
City-County Home Health Services
1625 Steward
Butte, Montana 59701
723-3282

Joanne Green
1101 Steel
Butte, Montana 59701
723-5816/792-8361

Robert Noble, M.D.
800 West Platinum
Butte, Montana 59701
792-4567

PROVIDERS

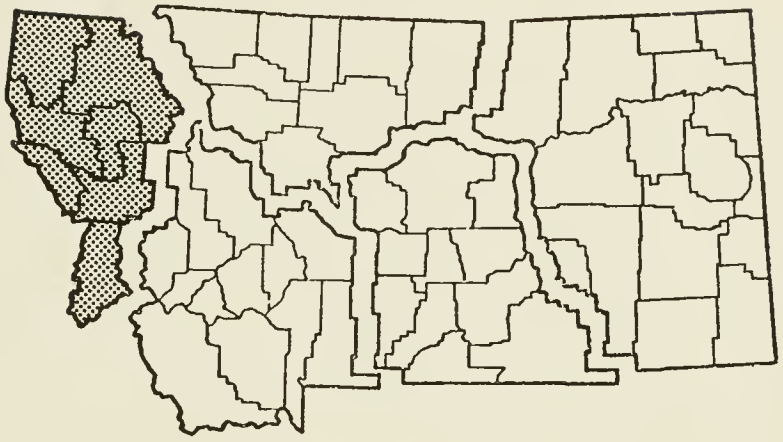
Ron Ronchetto
3131 Amherst
Butte, Montana 59701
792-1223

Dr. John Tkach
300 N. Wilson Avenue
Bozeman, Montana 59715
587-5443

Alden Way, Administrator
Powell County Memorial Hospital
1101 Texas Avenue
Deer Lodge, Montana 59722
846-2212

NORTHWESTERN MONTANA

Subarea Advisory Council Members



CONSUMERS

Eunice Beeley
Route 2, Box 2376A
Hamilton, Montana 59840
961-3422

Jack B. Dodd
Box 816
Whitefish, Montana 59937
862-2819

Clyde Dowell, **Vice Chairman, Program Review**
P.O. Box 435
Eureka, Montana 59917
296-2775

S.W. Eccleston, **Chairman, Plan Development**
575 C. Street, Box AH
Columbia Falls, Montana 59912
892-3995/892-3261 ext. 328

Rudyard Goode
643 East Beckwith
Missoula, Montana 59801
728-4766/243-6716

Jack Harwood
P.O. Box 837
Plains, Montana 59859
826-3573

Evelyn Johnson
430 South Fifth Street West
Missoula, Montana 59801
543-6737

Larry Ryan
506 West Alder Street
Missoula, Montana 59801
549-7836

CONSUMERS

Cathryn J. Strombo, **Secretary**
Route 1, Box 38
Superior, Montana 59872
822-4626

Robert Toole
Route 1, Box 27-I
Polson, Montana 59860
883-4432

PROVIDERS

G. Clark Anderson, **Director Vice Chrmn., Plan Dev.**
Western Montana Community Mental Health Center
Fort Missoula Road
Missoula, Montana 59801
543-5177

Dick Atkins, **Chairman**
Route 2, Box 2355
Hamilton, Montana 59840
961-3637/363-2211

Janet Hawley
307 Rimrock Way
Missoula, Montana 59801
728-8951/721-1420

Walter Koostra, **Vice Chairman**
908 Stephens Avenue
Missoula, Montana 59801
728-4325/243-2471

Richard L. Peterson, M.D.
1224 West Main
Hamilton, Montana 59840
363-1100

PROVIDERS

Ron Plummer
Hillside Manor
4720 23rd Avenue
Missoula, Montana 59801
543-5549/549-6134

Sheila Schreurs
County Courthouse
200 West Broadway
Missoula, Montana 59801
728-0820/721-5700 ext. 290

V.A. Yaholkovsky, M.D., **Chairman Program Review**
210 Sunnyview Lane
Kalispell, Montana 59901
755-8626/755-8606